Vol. 1023 Number 2

OFFICIAL GAZETTE

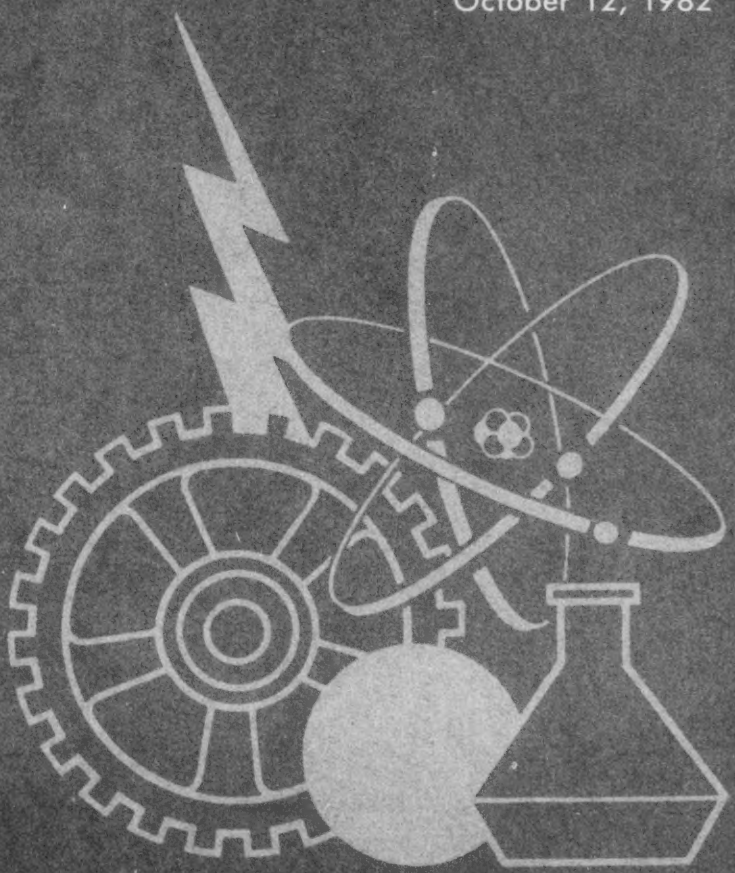
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

ute to:

PATENTS

October 12, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

October 12, 1982 Volume 1023 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	300.00
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 257,235, Re. S.N. 398,932, Filed July 16, 1982, Cl. D10/15, TRAVEL ALARM CLOCK, Michael Cheung, Owner of Record: *Promotors Ltd., Kowloon, Hong Kong,* Attorney or Agent: Henry L. Brinks, Ex. Gp.: 291

3,553,707, Re. S.N. 401,643, Filed July 26, 1982, Cl. 343/781, WIDE-BEAM HORN FEED FOR PARABOLIC ANTENNAS, Richard F. H. Yang, et al., Owner of Record: *Andrew Corp., du Page County, Ill.,* Attorney or Agent: Stephen G. Rudisill, et al., Ex. Gp.: 254

4,054,901, Re. S.N. 402,213, Filed July 26, 1982, Cl. 357/81, INDEX MOUNTING UNITARY HEAT SINK APPARATUS WITH APERTURED BASE, Steven F. Edwards, et al., Owner of Record: *Inventors,* Attorney or Agent: Jack A. Kanz, Ex. Gp.: 253

4,062,077, Re. S.N. 393,729, Filed June 30, 1982, Cl. 5/451, WATERBED MATTRESS CONSTRUCTION, Robert C. Autrey, et al., Owner of Record: *Morning Surf Corp., Salt Lake City, Utah,* Attorney or Agent: Edward S. Wright, Ex. Gp.: 355

4,078,171, Re. S.N. 405,487, Filed Aug. 5, 1982, Cl. 250/201, DIGITAL AUTO FOCUS, Norman L. Stauffer, Owner of Record: *Honeywell, Inc., Minneapolis, Minn.,* Attorney or Agent: Charles J. Ungemach, et al., Ex. Gp.: 252

4,209,245, Re. S.N. 391,042, Filed June 22, 1982, Cl. 354/51, LONG TIME EXPOSURE PREVENTING DEVICE FOR CAMERA WITH ELECTRONIC FLASH, Mashiro Kawasaki, et al., Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 211

4,216,539, Re. S.N. 403,973, Filed Aug. 2, 1982, Cl. 371/020, IN-CIRCUIT DIGITAL TESTER, Douglas W. Raymond, et al., Owner of Record: *Zehntel, Inc., Concord, Calif.,* Attorney or Agent: Travis Gordon White, et al., Ex. Gp.: 234

4,217,190, Re. S.N. 405,858, Filed Aug. 6, 1982, Cl. 204/129.35, METHOD AND APPARATUS FOR ELECTROCHEMICALLY FINISHING AIRFOIL EDGES, James W. Neal, et al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Charles G. Nessler, Ex. Gp.: 112

4,228,322, Re. S.N. 390,740, Filed June 21, 1982, Cl. 179/15.55T, DECREASING TIME DURATION OF RECORDED SPEECH, Charles Ronald Bringol, et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Andrea P. Bryant, Ex. Gp.: 214

4,232,733, Re. S.N. 406,999, Filed Aug. 10, 1982, Cl. 165/89, THERMAL EXCHANGER, Tadeusz Piotrowski, Owner of Record: *Etablissements Euroburner, Vadenz, Liechtenstein,* Attorney or Agent: Sandler & Greenblum, Ex. Gp.: 346

4,234,585, Re. S.N. 404,169, Filed Aug. 2, 1982, Cl. 424/250, 1,2-DIHYDROQUINOLINE-2ONE DERIVATIVES, Werner Winter, et al., Owner of Record: *Boehringer Mannheim GmbH, Mannheim, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 125

4,236,525, Re. S.N. 409,162, Filed Aug. 18, 1982, Cl. 128/419, MULTIPLE FUNCTION LEAD ASSEMBLY, James E. Sluetz, et al., Owner of Record: *Intermedics, Inc., Freeport, Tex.,* Attorney or Agent: Roy E. Hofer, et al., Ex. Gp.: 335

4,246,081, Re. S.N. 398,748, Filed July 16, 1982, Cl. 204/130, ELECTROCHEMICAL SEPARATION AND CONCENTRATION OF SULFUR CONTAINING GASES FROM GAS MIXTURES, Jack Winnick, Owner of Record: *Inventor,* Attorney or Agent: James E. Denny, Ex. Gp.: 112

4,246,081, Re. S.N. 399,051, Filed July 16, 1982, Cl. 204/130, ELECTROCHEMICAL SEPARATION AND CONCENTRATION OF SULFUR CONTAINING GASES FROM GAS MIXTURES, Jack Winnick, et al., Owner of Record: *Inventors,* Attorney or Agent: James E. Denny, et al., Ex. Gp.: 112

4,256,173, Re. S.N. 406,426, Filed Aug. 9, 1982, Cl. 165/9.3, TWO REGENERATOR-FLUE SYSTEM FOR REGENERATIVE FURNACES, Yih-Wan Tsai, et al., Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 346

4,257,476, Re. S.N. 406,636, Filed Aug. 9, 1982, Cl. 165/9.3, MANIFOLD REGENERATION FLUES FOR REGENERATIVE FURNACES, Yih-Wan Tsai, Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 346

4,258,169, Re. S.N. 404,415, Filed Aug. 2, 1982, Cl. 528/72, POLYISOCYANATE COMPOSITIONS CONTAINING IN-SITU FORMED PYROPHOSPHATE MOLD RELEASE AGENT AND PROCESS, Warren J. Rabourn, et al., Owner of Record: *The Upjohn Co., North Haven, Conn.,* Attorney or Agent: Denis A. Firth, et al., Ex. Gp.: 143

4,259,716, Re. S.N. 396,171, Filed July 7, 1982, Cl. 363/97, TRANSFORMER FOR USE IN A STATIC INVERTER, James E. Harris, et al., Owner of Record: *General Electric Co., Syracuse, N.Y.,* Attorney or Agent: Richard V. Lang, et al., Ex. Gp.: 212

4,272,254, Re. S.N. 404,894, Filed Aug. 3, 1982, Cl. 44/70, HYDROCARBON FUEL HAVING IMPROVED COMBUSTION EFFICIENCY, Takashi Minezaki, Owner of Record: *Inventor,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 113

4,287,021, Re. S.N. 403,122, Filed July 29, 1982, Cl. 162/358, EXTENDED NIP PRESS, Edgar J. Justus, et al., Owner of Record: *Beloit Corp., Beloit, Wis.,* Attorney or Agent: James van Santen, et al., Ex. Gp.: 173

4,298,308, Re. S.N. 405,779, Filed Aug. 6, 1982, Cl. 414/730, APPARATUS FOR DETECTING FORCES DIRECTING THE MOVEMENT OF A MANIPULATING INSTRUMENT, Hans Richter, Owner of Record: *Inventor,* Attorney or Agent: Elliott I. Pollock, Ex. Gp.: 314

4,328,727, Re. S.N. 403,291, Filed July 30, 1982, Cl. 83/106, SLITTER-SCORER APPARATUS, Masateru Tokuno, Owner of Record: *Rengo Co., Ltd., Osaka, Japan,* Attorney or Agent: Henry Shur, et al., Ex. Gp.: 323

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue

Disciplinary Proceeding No. 82–2
Final Order

Upon consideration of a NOTICE OF PROCEEDING UNDER 35 U.S.C. §32 and the Commissioner's MOTION FOR ENTRY OF FINAL ORDER, it appearing that respondent has failed to timely file an answer to the notice as required by 37 CFR §1.348(c), it is ordered that said motion be and the same is hereby granted and it is further ordered that respondent ALBERT C. HODGSON (Registration No. 20772) is hereby excluded from further practice before the U.S. Patent and Trademark Office. This FINAL ORDER is being entered pursuant to 35 U.S.C. §32.

DONALD J. QUIGG,
May 17, 1982. *Acting Commissioner of Patents and Trademarks.*

Disciplinary Proceeding No. 82–3
Final Order

Upon consideration of a NOTICE OF PROCEEDING UNDER 35 U.S.C. §32, respondent PATTISON'S ANSWER TO PROCEEDING UNDER 35 U.S.C. SEC. 32, the Solicitor's MOTION entered May 27, 1982, the Deputy Commissioner's ORDER entered June 8, 1982, respondent's failure to respond to the Deputy Commissioner's ORDER and the Solicitor's MOTION FOR ENTRY OF FINAL ORDER, it is ordered that said MOTION FOR ENTRY OF FINAL ORDER be and the same is hereby granted and it is further ordered that respondent WILLIAM H. PATTISON, JR. (Registration No. 16070) is hereby excluded from further practice before the U.S. Patent and Trademark Office. This FINAL ORDER is being entered pursuant to 35 U.S.C. §32.

DONALD J. QUIGG,
Aug. 30, 1982. *Deputy Commissioner of Patents and Trademarks.*

Disciplinary Proceeding No. 82–4
Final Order

Upon consideration of the NOTICE OF PROCEEDING UNDER 35 U.S.C. §32, respondent WILLIAM F. FRANK'S RESPONSE TO NOTICE OF PROCEEDING UNDER 35 U.S.C. Sec. 32 and the STIPULATION of the Solicitor and respondent, it is.

ORDERED that respondent WILLIAM F. FRANK is hereby suspended from practice before the Patent and Trademark Office for a period of six (6) months, beginning on the date two (2) weeks after the date of this FINAL ORDER, and it is.

FURTHER ORDERED that after expiration of the period of six (6) months' suspension, as a condition precedent to being reinstated on the Patent and Trademark Office roster, respondent is required to satisfy the Committee on Enrollment [37 CFR 1.341(i)] that he has so arranged his business affairs that it would be unlikely in the future for respondent to neglect a legal matter entrusted to him, DR 6–101(A) (3), and in connection therewith, to permit the Committee on Enrollment or its delegate to inspect the premises in which he does Patent and Trademark Office-related business, and it is.

FURTHER ORDERED that respondent give notice of his suspension immediately, by certified mail, to all clients for whom he is currently handling matters before the Patent and Trademark Office, and make immediate arrangements for the disposition of matters presently in his care in conformity with the wishes of his clients, and it is.

FURTHER ORDERED that as a further condition precedent to being reinstated on the Patent and Trademark Office roster, respondent will file with the Solicitor within two (2) weeks of the date of this FINAL ORDER, an affidavit or declaration affirming that he has given such notice to his clients, and it is.

FURTHER ORDERED that as a further condition precedent to being reinstated on the Patent and Trademark Office roster, respondent will file in writing with the Solicitor within two (2) weeks of the date of this FINAL ORDER, a list of all pending patent applications, including serial number, filing date and inventor(s), in which he has a power of attorney as principal or associate attorney.

DONALD J. QUIGG,
Aug. 30, 1982. *Deputy Commissioner of Patents and Trademarks.*

National Technical Information Service
U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce

SN 6-364,290. SUPERCRITICAL CO_2 EXTRACTION OF LIPIDS FROM LIPID-CONTAINING MATERIALS. Department of Agriculture.

SN 6-382,903. STABLE EMULSIFIED MEAT PRODUCTS AND METHOD OF MAKING. Department of Agriculture.

SN 6-380,375. ARTIFICIAL HOST EGG FOR REARING TRICHOGRAMMA. Department of Agriculture.

SN 6-391,065. DISEASE CONTROL IN AVIAN SPECIES BY EMBRYONAL VACCINATION. Department of Agriculture.

SN 6-352,661. INVOLUTED DISC SLICER. Department of Agriculture.

SN 6-290,542. VIBRATING SEPARATOR. Department of Agriculture.

SN 6-288,261. METHOD AND COMPOSITION FOR LURING COYOTES. Department of Agriculture.

SN 6-274,087. A RECESSIVE TALL—A FOURTH GENETIC ELEMENT TO FACILITATE HYBRID CEREAL PRODUCTION. Department of Agriculture.

SN 6-288,259. BAIT POST. Department of Agriculture.

SN 6-300,784. HOT-CALLUSING DEVICE FOR TREE GRAFTING. Department of Agriculture.

SN 6-325,076. VASE LIFE EXTENDER FOR CUT FLOWERS. Department of Agriculture.

SN 6-370,019. DIBUTYLORTHOBENZYLMETHOXYBENZENES AND DIBUTYLORTHOCINNAMYLMETHOXYBENZENES AS MOSQUITO LARVAE GROWTH INHIBITORS. Department of Agriculture.

SN 6-326,086. METHOD OF PRESSING RECONSTITUTED LIGNOCELLULOSTIC MATERIALS. Department of Agriculture.

SN 6-351,400. POWERED TREE CHIPPER OR BARK HACK. Department of Agriculture.

SN 6-144,043. (4,344,438) OPTICAL SENSOR OF PLASMA CONSTITUENTS. Department of Health, Education & Welfare.

SN 6-150,550. (4,344,857) ENCAPSULATION BY ENTRAPMENT. Department of Agriculture.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 12, 1982,

Re. 29,697	4,313,421	4,330,634	4,339,246
Re. 30,262	4,314,621	4,330,816	4,339,506
D. 262,748	4,315,474	4,330,832	4,339,523
D. 264,966	4,317,092	4,331,054	4,339,645
D. 265,378	4,318,748	4,331,270	4,339,902
4,047,978	4,319,084	4,331,786	4,340,048
4,143,070	4,319,192	4,331,924	4,340,080
4,160,862	4,319,551	4,331,931	4,340,108
4,162,516	4,320,345	4,332,236	4,340,207
4,206,283	4,320,537	4,332,477	4,340,553
4,215,328	4,321,015	4,332,713	4,340,698
4,227,854	4,321,134	4,332,902	4,340,749
4,234,431	4,321,295	4,333,167	4,340,849
4,235,927	4,322,432	4,333,594	4,341,075
4,238,807	4,322,727	4,333,713	4,341,222
4,240,937	4,322,848	4,333,774	4,341,686
4,243,587	4,322,986	4,334,074	4,341,820
4,244,298	4,323,591	4,334,106	4,341,922
4,246,640	4,323,633	4,334,167	4,342,115
4,254,322	4,323,695	4,334,281	4,342,166
4,254,360	4,323,904	4,334,793	4,342,419
4,260,745	4,323,979	4,334,828	4,342,552
4,260,828	4,325,438	4,334,877	4,342,580
4,268,839	4,325,692	4,335,211	4,342,584
4,272,719	4,326,198	4,335,426	4,342,611
4,276,651	4,326,458	4,335,623	4,342,629
4,278,207	4,326,795	4,335,697	4,342,912
4,281,427	4,327,245	4,336,119	4,342,948
4,284,615	4,327,249	4,336,528	4,343,921
4,285,464	4,327,315	4,336,609	4,343,942
4,288,798	4,327,480	4,336,746	4,343,974
4,289,477	4,328,323	4,336,927	4,344,009
4,289,527	4,329,057	4,337,047	4,344,199
4,292,256	4,329,085	4,337,101	4,344,250
4,292,524	4,329,761	4,337,451	4,344,429
4,295,909	4,329,928	4,338,046	4,345,910
4,297,111	4,330,091	4,338,153	4,345,994
4,303,566	4,330,123	4,338,345	
4,310,069	4,330,324	4,338,380	
4,312,629	4,330,589	4,339,241	

Dedication

4,151,026.—*Jean J. Hospied,* Dottignies, Belgium. APPARATUS FOR MANUFACTURING FABRIC WITH NON-WOVEN PILE. Patent dated Apr. 24, 1979. Dedication filed Apr. 14, 1982, by the assignee, *A. F. Stoddard & Co. Ltd.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

Re. 27,947.—*Lawrence N. Mertz,* Lexington, Mass. INTERFERENCE TECHNIQUE AND APPARATUS FOR SPECTRUM ANALYSIS. Patent dated Mar. 26, 1974. Disclaimer and Dedication filed Sept. 8, 1980, by the assignee, *Bio-Rad Laboratories, Inc.*

Hereby disclaims all claims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	*Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-30-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,204,251 to 3,209,368, inclusive

Plant Patents ..... Numbers 2,552 to 2,557 inclusive

REISSUES

OCTOBER 12, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,052

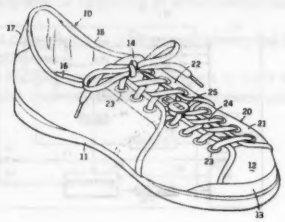
LACING ASSEMBLY FOR A SHOE

Thomas M. Adams, San Antonio, Tex., assignor to Kaepa, Inc., San Antonio, Tex.

Original No. 4,200,998, dated May 6, 1980, Ser. No. 910,774, May 30, 1978. Application for reissue Feb. 9, 1981, Ser. No. 232,854

Int. Cl.³ A43B *11/00*; F16G *11/04*

U.S. Cl. 36—50 **4 Claims**



3. In a lacing assembly for a shoe:

(a) a vamp having adjacent vamp sections,

(b) a single, continuous lace having only one pair of ends, the single lace lacing both vamp sections, and having the one pair of lace ends selectively tied at one of the vamp sections, and

(c) a clamp interconnecting the single lace at the other of said vamp sections for selectively fixing or loosening the lace and maintaining the lace at the said other vamp section for the comfort of the wearer independently of the said one vamp section, the said one pair of lace ends being separately, selectively tied at the said one vamp section and adjusting the fit of the said one vamp section for the comfort of the wearer independently of the said other vamp section.

Re. 31,053

APPARATUS AND METHOD FOR HOLDING AND PLANARIZING THIN WORKPIECES

Victor A. Firtion, Secaucus; Donald R. Herriott, Morris Township, Morris County; Martin E. Poulsen, New Providence; Leif Rongved, Convent Station, and Thomas E. Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 4,213,698, dated Jul. 22, 1980, Ser. No. 965,304, Dec. 1, 1978. Continuation-in-part of Ser. No. 871,477, Jan. 23, 1978, abandoned. Application for reissue May 1, 1981, Ser. No. 259,596

Int. Cl.³ G03B *29/00*; B25B *11/00*; B23Q *7/00*

U.S. Cl. 355—77 **6 Claims**

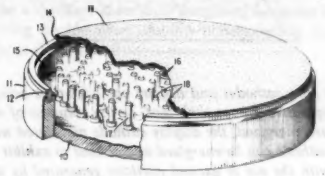
1. A vacuum apparatus for holding and planarizing a thin workpiece on a holding face which minimizes the interposition of dirt particles between said workpiece and said holding face, said apparatus comprising:

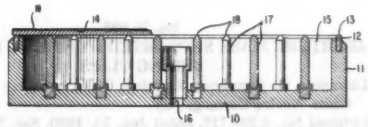
(a) a baseplate having a rigid raised rim which includes a smooth planar edge surface adapted to support a workpiece having front and back surfaces, said edge surface being adapted to contact the periphery of said back surface to make a substantially airtight seal thereto, thus forming an evacuable chamber enclosed by said baseplate, said rim, and said back surface;

(b) a plurality of [regularly] spaced-apart rigid support members disposed within said chamber, each providing a localized pinpoint abutment with said back surface, said abutments together with said edge surface forming a holding face which is substantially planar, each of said abutments having an area sufficiently small to reduce the probability of dirt particles collecting thereon, evacuation of said chamber producing a pressure difference between said front and back workpiece surfaces forcing said back surface to conform to said holding face, the spacing between adjacent ones of said abutments and the spacing between said abutments nearest said rim and said edge-surface being sufficiently small to prevent significant distortion of the unsupported regions of said workpiece.

5. In the fabrication of semiconductive devices, a method for positioning and planarizing a substrate wafer having a front and a back surface, said method comprising the steps of:

loosely positioning said wafer in a general position;





applying substantially uniformly distributed forces along said front surface;

applying a multiplicity of localized forces along said back surface, said back surface forces counterbalancing said front surface forces and being sufficient to planarize said wafer;

applying each of said localized forces to an area of said back surface which area is in the range of 2×10^{-5} to 2×10^{-3} square inches;

initially moving said wafer in a direction transverse to that of said localized forces so as to dislodge any dirt particles in contact with said back surface.

Re. 31,054

DISPLAY PANEL HAVING ROWS AND COLUMNS OF COPLANAR SCAN AND DISPLAY CATHODES AND LARGE-AREA ANODE

Edgar L. Harvey, Jamesburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Original No. 3,959,681, dated May 25, 1976, Ser. No. 535,891, Dec. 23, 1974. Application for reissue Aug. 17, 1977, Ser. No. 825,361

Int. Cl.³ H01J *61/067, 6/30, 6/54*

U.S. Cl. 313—188 **21 Claims**

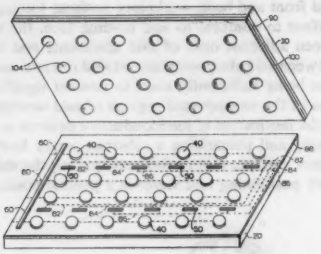
10. A display panel comprising

a gas-filled envelope made up of a base plate and a face plate viewing window hermetically sealed together and including

an array of first display cathode electrodes, adapted for viewing, disposed in rows and columns and including means for energizing all of the display cathodes in each row simultaneously,

an array of second scan cathode electrodes, disposed in rows and columns, with selected first and second cathode electrodes

being disposed in operative relation with each other, and means for energizing all of the scan cathode electrodes in each column simultaneously and for energizing the columns of scan cathodes sequentially, said scan cathode electrodes exhibiting scan cathode glow when energized and generating excited particles,



the scan cathodes and display cathodes thus being disposed in operative groups such that, as the columns of scan cathodes are energized, the display cathode associated with each scan cathode can be energized and caused to exhibit cathode glow with the aid of excited particles generated by the associated scan cathode, and

anode electrode means in operative glow discharge relationship with said scan and display cathode.

Re. 31,055

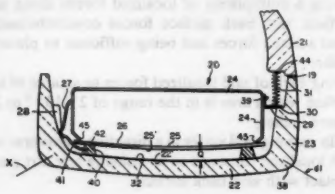
APERTURE MASK SUPPORTED BY SPRING LUGS AND SPRING CLIPS

Lawrence B. Hausheer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Original No. 4,209,727, dated Jun. 24, 1980, Ser. No. 954,489, Oct. 25, 1978. Application for reissue Dec. 24, 1980, Ser. No. 219,913

Int. Cl.³ H01J *29/07, 31/08, 29/82*

U.S. Cl. 313—404 **8 Claims**



1. In a color television bulb formed with a panel, a peripheral panel skirt integral therewith, a funnel portion adapted to mate with the panel skirt, a frame and aperture mask adapted to be mounted in said frame and secured in spaced relation with the panel; a supporting structure for the aperture mask and frame including: peripherally located outwardly extending spring lugs and peripherally located outwardly extending spring clips secured to the frame and respectively operative for xy orientation and a Q spacing of the mask and frame; the panel skirt being formed with a selected number of V grooves each located so as to receive a corresponding one of the spring lugs; and a ledge face spaced away from an inside surface of the panel to cooperatively engage with and support the spring clips, a forward portion of the funnel adapted to be in spaced relation with the ledge face, spring means engaging each respective spring clip at one end and the forward portion of the funnel at the other when located in said spaced relation for urging each respective spring clip against the ledge face such that xy orientation and Q spacing of the aperture mask and frame are fixed relative to the panel when the funnel and panel skirt are mated.

Re. 31,056

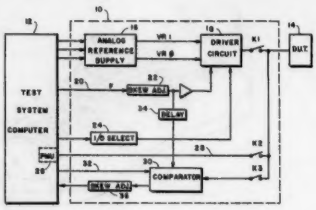
COMPUTER CONTROLLED HIGH-SPEED CIRCUIT FOR TESTING ELECTRONIC DEVICES

Yuk B. Chau, Torrance; George Niu, Sunnyvale, and Rudolph Staffelbach, Santa Clara, all of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Original No. 4,092,589, dated May 30, 1978, Ser. No. 780,382, Mar. 23, 1977. Application for reissue May 28, 1980, Ser. No. 154,151

Int. Cl.³ G01R *15/12, 31/02*

U.S. Cl. 324—73 R **8 Claims**



10. A high-speed testing circuit for applying first test stimuli input signals to an electronic device and for receiving device output signals from said device generated in response to second test stimuli signals originating from another source, said testing circuit comprising:

voltage reference supply circuit means for supplying a first direct current (D.C.) reference signal at a first voltage reference level and a second D.C. reference signal at a second voltage reference level in response to D.C. input signals at a plurality of input voltage levels;

skew adjustment circuit means for receiving a train of high-frequency pulses and for adjusting the times of occurrences of the leading and trailing edges of the high-frequency pulses to produce a train of skew-adjusted pulses; and

driver circuit means responsive to the D.C. reference signals and to the train of skew-adjusted pulses for switching between the voltage reference levels at a switching rate determined by the frequency of the train of skew-adjusted pulses to generate the first test stimuli signals for application to an input terminal of said device, said driver circuit means comprising

a. a first and a second diode bridge circuit, each diode bridge circuit comprising a first, a second, a third, and a fourth diode and having (1) a first terminal coupled to the anodes of the first and second diodes, (2) a second terminal coupled to the cathodes of the third and fourth diodes, (3) a third terminal coupled between the cathode of the first diode and the anode of the third diode, and (4) a fourth terminal coupled between the cathode of the second diode and the anode of the fourth diode;

b. output circuit means coupled to the fourth terminals for transmitting the first test stimuli signals;

c. current switching means for switching current between said diode bridge circuits at said switching rate, said current switching means coupled between a first voltage supply and the first terminals and coupled between a second voltage supply and the second terminals, said current switching means further coupled through common current-source resistors to form a differential circuit through said diode bridge circuits;

d. reference input circuit means coupled to said voltage reference supply circuit means for applying the first D.C. reference signal to the third terminal of said first diode bridge circuit and the second D.C. reference signal to the third terminal of said second diode bridge circuit; and

e. pulse input circuit means coupled to said skew adjustment

circuit means for receiving the train of skew-adjusted pulses and coupled to said current switching means for providing intermediate pulses thereto.

Re. 31,057

CHROMIUM-DOPED BERYLLIUM ALUMINATE LASERS

Robert C. Morris, Ledgewood, N.J., and Carl F. Cline, Walnut Creek, Calif., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Original No. 3,997,853, dated Dec. 14, 1976, Ser. No. 528,053, Nov. 29, 1974. Application for reissue Dec. 6, 1978, Ser. No. 967,172

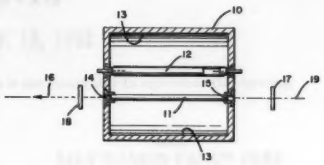
Int. Cl.³ H01S *3/16*

U.S. Cl. 372—41 **4 Claims**

1. In a laser capable of operating at room temperature comprising:

a. a laser host comprising at least one single crystal incorporating a dopant; and

b. means for exciting atoms of the dopant to emit coherent radiation, the improvement which comprises utilizing as the laser host, a single crystal of beryllium aluminate ($BeAl_2O_4$) doped with trivalent chromium ions, the single crystal being crystallographically oriented substantially



along the a–c plane, at least 30° removed from the b-axis, and having a chromium doping concentration ranging from about 0.005 to 1.0 atom percent.

PLANT PATENTS

GRANTED OCTOBER 12, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,894

NECTARINE TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Feb. 9, 1981, Ser. No. 232,725
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized, in particular, by freestone fruit having general resemblance to the Summer Grand but ripening about a week earlier, and ripening substantially with the Sun Grand and Flavortop.

4,895

LILY NAMED FANCY FREE

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Dec. 11, 1980, Ser. No. 215,534
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of oriental hybrid lily plant substantially as herein shown and described, characterized by its large, generally flat, reddish pink and white, outwardly-facing flowers borne on strong, stiff pedicels, by its dark green and glossy foliage, and by the long lasting quality of the blooms whether on the plant or as cut flowers.

PLANT PATENTS

GRANTED OCTOBER 12, 1971

PATENTS

GRANTED OCT. 12, 1982

ERRATA

For CLASS	See PATENT NO.
128–689	4,353,152
464–040	4,353,226
524–232	4,353,817
524–458	4,353,818
523–454	4,353,819
524–409	4,353,820
549–229	4,353,831
549–272	4,353,832
378–099	4,354,112

PATENTS

GRANTED OCTOBER 12, 1982

GENERAL AND MECHANICAL

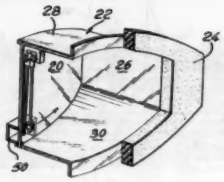
4,353,133
SHOULDER PROTECTION DEVICE
Paul D. Williams, Davison, Mich., assignor to Williams Gun Sight Co., Davison, Mich.
Filed Jan. 21, 1980, Ser. No. 113,464
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **2 Claims**

1. A shoulder protection device comprising a lightweight flexible shoulder harness assembly and an energy absorbing flexible shoulder pad which is retained by said shoulder harness assembly adjacent the shoulder area along one side of the upper front chest of the user to protect said shoulder area against forces directed thereto, said shoulder harness assembly including a plurality of strap members which are operatively connected with one another and said shoulder pad to define a strap assembly extending solely about the upper back and around both shoulders of the user, said strap assembly defining a first loop assembly which extends about the upper trunk and around that shoulder of the user which defines said shoulder area, said first loop assembly including said shoulder pad, a first strap member attached to said shoulder pad and extending therefrom underneath the user's arm adjacent said shoulder area to the user's upper middle back area, a second strap member attached to said shoulder pad and extending therefrom over the shoulder defining said shoulder area to the user's upper middle back area, and a first means for connecting said first and second strap members to one another in the user's upper middle back area, said strap assembly further defining a second loop assembly which is connected to said first loop assembly and which extends solely along the uppper back and around the other shoulder of the user with no involvement of the upper front chest of the user opposite said one side, said second loop assembly including a third strap member which is operably connected at one end thereof to said first loop assembly by said first connecting means and which extends therefrom across the upper back, underneath the other arm, and up and across the back of the neck of the user to intersect said second strap member, and a second means for connecting said third strap member to said second strap member at the point where said second and third strap members intersect, with at least one of said strap members being length adjustable to enable the size of said strap assembly to be adjusted to allow the device to be worn by users of different shapes and sizes.

4,353,134
UNDERWATER SWIMMING GOGGLES AND MASKS WITH GRAVITY-OPERATED WIPERS
Thomas C. Macnabb, 4 Maple Apt. 23, Ste-Anne de Bellevue, Quebec H9X 2E4, Canada
Filed Aug. 14, 1981, Ser. No. 292,956
Int. Cl.³ A61F *9/04*
U.S. Cl. 2—428 **15 Claims**

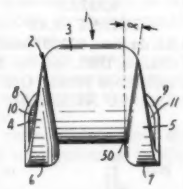
1. In an underwater swimming mask or goggles having a lens with an inner surface, a frame mounting said lens in spaced relationship to a swimmer's eye and a water-excluding face-fitting skirt peripherally extending from said frame, the improvement comprising:

wiper means mounted for sweeping movement across a viewing area of said lens and in wiping contact with said lens inner surface, and



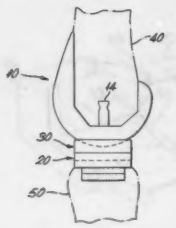
weight means connected to and displaceable with said wiper means for moving same in response to tilting movements of said mask or goggles when worn by the swimmer during swimming, whereby said tilting movements cause said weight means to be displaced by gravity and to thereby move said wiper means therewith so as to dissipate mist or droplets of water collected on said lens inner surface and to clear said viewing area.

4,353,135
PATELLAR FLANGE AND FEMORAL KNEE-JOINT PROSTHESIS
Mark R. Forte, Pine Brook, N.J., and David A. Sonstegard, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 9, 1980, Ser. No. 148,291
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.911 **6 Claims**



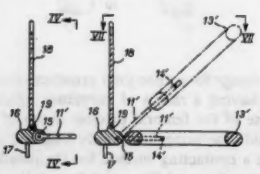
1. A patellar flange for a knee-joint prosthesis comprising (1) a curved base having a radius of curvature substantially the same as the base of the femoral patellar notch of the natural human knee, said base being sufficiently long and wide superiorly to provide a contacting surface for the patella when the knee is in full extension, and (2) a pair of condylar runners, one of said condylar runners being attached to each lateral side of the base and extending outwardly anteriorly from said base, said condylar runners diverging from each other and converging to said base as they proceed superiorly on said base and being of sufficient length to provide a contacting surface for the patella as the knee is flexed.

4,353,136
ENDOPROSTHETIC KNEE JOINT
Apostolos J. Polyzoides, Breakway, School Rd., Hockley Heath, Lapworth, West Midlands, England, and Athanassios Tsakonas, 5 Agiou Serafim St., Salonika 366, Greece
Filed Nov. 5, 1980, Ser. No. 204,269
Int. Cl.[3] A61F 1/24
U.S. Cl. 3—1.911 5 Claims



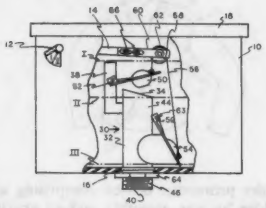
1. An endoprosthetic knee joint device of bicondylar form comprising a femoral component for securement to the femur and having two separate articulatory bearing portions joined together at least at their anterior regions in a side-by-side spaced disposition for respective location in the lateral and medial compartments of the knee, a tibial component for securement to the tibia and having two separate articulatory bearing portions joined together at least at their anterior regions in a side-by-side spaced disposition for respective location in said compartments, and a meniscal component having two separate articulatory bearing portions for respective location in said compartments between said femoral and tibial component portions, each said femoral component portion having a convexly curved articulatory bearing surface portion, each said tibial component portion having a relatively flattened articulatory bearing surface portion, each said meniscal component portion having two articulatory bearing surface portions in opposed disposition and of individual forms substantially complementary to and engaged with the said tibial component having one of a longitudinally arcuate groove and a rib extending in a singular form extending across both of the bearing and joining portions thereof, said meniscal component portions each having a portion of the other of said groove and rib slidably engaged in said one thereof, and each of said engagements being non-captive.

4,353,137
TOILET SEAT
Pierre Jammet, 16 Bd. du Parc, 92200 Neuilly-sur-Seine, France
Filed Oct. 16, 1980, Ser. No. 197,532
Claims priority, application France, Oct. 26, 1979, 79 26587
Int. Cl.[3] A47K 13/00
U.S. Cl. 4—237 5 Claims



1. A seat for a toilet bowl which has two holes on its rear top area for fitting a flap-seat, the seat comprising a readily changeable annular seat member, a crosspiece having fastening members adapted to be received in the holes in the toilet bowl for securing said crosspiece relative to the toilet bowl, and pegs mounted on the crosspiece for pivotal movement between a raised inoperative position and a lowered operative position, said annular seat member having holes for receiving said pegs to permit said annular seat member to be readily inserted on said pegs or removed therefrom by simple relative displacement thereon.

4,353,138
TWO STAGE FLUSH VALVE ASSEMBLY
Ralph M. Bell, Bradenton, Fla., assignor to Bell and Rodhouse Engineering, Inc., Bradenton, Fla.
Filed Aug. 21, 1981, Ser. No. 295,080
Int. Cl.[3] E03D 1/34
U.S. Cl. 4—326 7 Claims



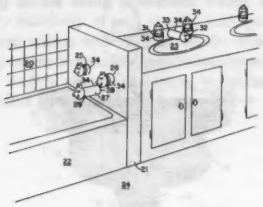
5. A two level flush valve assembly for use in a water tank of a toilet, comprising:
(a) an essentially cylindrical, hollow valve body having an upper flush opening, a lower flush opening, an overflow pipe and a discharge opening;
(b) a first valve element pivotedly connected to said valve body for closing said upper flush opening;
(c) a second valve element pivotedly connected to said valve body for closing said lower flush opening;
(d) a pivotal flush handle mounted on said tank, said handle having one end of a lever arm attached thereto;
(e) a pully rotatably mounted on the other end of said lever arm; and
(f) a chain which is entrained over said pulley and interconnects said first valve element and said second valve element such that only said first valve element is pivoted open in response to movement of said flush handle approximately one-half of its total distance of travel and both said first valve element and said second valve element are pivoted open in response to movement of said flush handle its total distance of travel.

4,353,139
PROTECTIVE COVER FOR INDIVIDUAL WATER FIXTURES
Richard M. Wainwright, P.O. Box 541, Dennis, Mass. 02638, and Steven Wilson, 14 Elisha's La., Yarmouthport, Mass. 02675
Filed Jan. 10, 1980, Ser. No. 110,918
Int. Cl.[3] A47K 17/00
U.S. Cl. 4—661 6 Claims

1. A removable protective cover for each individual water control handle or spout projecting from a wall, bathtub, or sink in position to hurt the user by accidental contact, said cover comprising:
an elongated tubular body, entirely of soft, deformable, cushion material, said body having a hollow cylindrical side wall of uniform outside diameter, or uniform inside diameter substantially equal to the outside diameter of a typical spout, and of predetermined length slightly greater than the length of said typical spout;
said body having one end open for slidable sleeving over said spout and having an opposite, closed imperforate end of said cushion material, enlarged to greater dimensions

than the outside diameter of said cylindrical side wall to cushion the tip of said spout;

and the hollow cylindrical side wall of said body being longitudinally split along its bottom from said open end to said closed end with a water emission aperture in the



bottom of said side wall and forming part of said slit, said aperture being of predetermined dimensions to loosely fit around the downturned tip of said spout;

said cover wholly enclosing an individual, projecting, water control, handle or spout, to cushion the same against human impact from any direction.

4,353,140

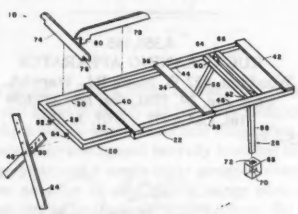
FRAME FOR ELECTRIC BLANKET SUPPORT

Wolfram G. Graber, 2002 Norbert St., Spring Hill, Fla. 33526

Filed Nov. 14, 1980, Ser. No. 207,005

Int. Cl.³ A47C *21/02*

U.S. Cl. 5—505 **1 Claim**



1. A frame deployable for electric blanket support above a bed or the like to provide infrared radiation for a sleeper without any blanket contact with the sleeper, and foldable for storage, including, in combination: a first slide with a headward end and a footward end, a second slide with a headward end and a footward end, tool-free means for slidably deploying the first and second slides for electric blanket supporting comprising: means for clasping together under gravitational force the headward end of the second slide and the footward end of the first slide, including first and second means manually adjustable for respectively supporting the headward end of the first slide and the footward end of the second slide; wherein the means for clasping comprise: the first and second slides being rectangular in form with respective sides, the first slide fitting in-plane between the sides of the second slide and having at the footward end thereof a transverse projection over the sides of the second slide, the headward end of the second slide having a transverse projection over the sides of the first slide; and means permitting ready separation of said first and second slides, comprising the bottom of said first slide being free of constraint by the second slide and the bottom of the second slide being free of constraint by the first slide.

4,353,141

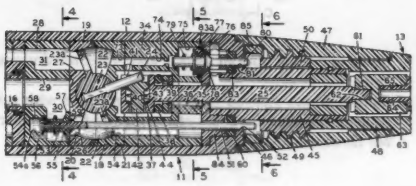
POWER TOOTHBRUSH

W. Dorwin Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, N.Y. 11363

Continuation-in-part of Ser. No. 920,685, Jun. 30, 1978, Pat. No. 4,210,975, which is a division of Ser. No. 848,807, Nov. 7, 1977, Pat. No. 4,175,299. This application Jul. 7, 1980, Ser. No. 166,705

Int. Cl.³ A46B *13/06*

U.S. Cl. 15—22 R **10 Claims**



1. A water-powered appliance comprising

(a) a housing,

(b) a working element movably associated with one end of said housing,

(c) orbital output drive means within said housing for driving said working element through a predetermined motion,

(d) said orbital output drive means comprising a fluid-powered, nutating motor having a motor housing,

(e) a saturn disc mounted within said motor housing for universal tilting movement within predetermined limits,

(f) a source of motive fluid for driving said saturn disc through said tilting movement,

(g) said appliance housing being of a size and shape to be held by one hand of an operator with the thumb of the holding hand extending generally toward the forward end of the housing associated with said working element and on one side of said nutating action motor,

(h) a valve operating member mounted by said appliance housing for rotational movement relative to said housing and being mounted in the area of said housing engaged by the thumb of the holding hand,

(i) said valve-operating member being rotatable by thumb motion of the operator,

(j) a valve providing fluid communication between said source of motive fluid and said nutating motor,

(k) said valve being mounted within the housing on the side of the motor opposite the thumb engaging portion of the appliance housing, and

(l) a rod-like valve actuator extending within said appliance housing from the valve-operating member to the valve and passing directly through the saturn disc of the nutating action motor,

(m) said rod-like valve actuator being axially movable by rotation of said valve-operating member to actuate said valve.

4,353,142

MOP CARRIER AND A ROTARY SUPPRESSOR THEREIN

Masanobu Nishiyama, Osaka, and Yasuhiro Kiuchi, Minoo, both of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan

Filed Jun. 9, 1980, Ser. No. 157,982

Claims priority, application Japan, Jan. 25, 1980, 55-7711[U]

Int. Cl.³ A47L *13/254*

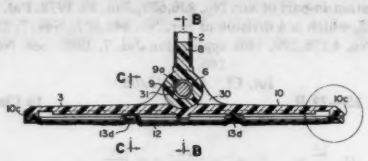
U.S. Cl. 15—144 R **13 Claims**

1. A mop carrier assembly, comprising:

a carrier frame including an upper base frame member, and a lower inner base plate member secured therewith so as to

have a bottom surface thereof presented downwardly, said carrier frame including means for mounting the carrier frame to a mop handle;

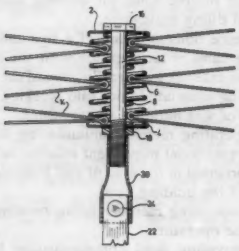
a layer of a first hook and fleece-type fastener member dis-



posed upon said bottom surface and presented downwardly; and

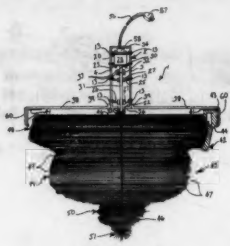
a support frame secured to said carrier frame with said first fastener member therebetween, with said first fastener member downwardly being largely exposed.

4,353,143
SWEEPING APPARATUS
Joseph L. Y. Beaudoin, 1026 Willowdale Ave., Willowdale, Ontario, Canada (M3M 3E1), and Joseph F. Y. Beaudoin, 61 Madawaska Ave., Toronto, Ontario, Canada (M2M 2R2)
Filed Oct. 15, 1980, Ser. No. 197,220
Int. Cl.³ A46B 3/18
U.S. Cl. 15—162 **7 Claims**



1. A chimney cleaning apparatus having a unitary pushing means, brush attachment means secured to one end thereof, and a tined brush of predetermined planform having a central spindle portion, an inner coil spring and an outer coil spring in mutual radially spaced relation mounted over the spindle portion, the coils of the inner spring being moveable axially within the coils of the outer spring, stiff wire tines each encircling the wire of the inner spring in pivotal relation therewith and extending between adjacent coil portions of the outer spring to permit elastic coning deformation of the brush for insertion of the brush past a restriction, in use, said unitary pushing means having sufficient length to traverse a chimney of predetermined length, and comprising an elastically deformable strap of rectangular section to permit elastic deformation of the strap to relatively short radiused bends, in the plane of the strap, and possessing sufficient stiffness to displace said brush upwardly along a chimney in surface cleaning relation therewith, said central spindle portion having a threaded end portion and threadedly adjustable nut means rotatably mounted thereon for axially pre-loading one said spring relative to the other said spring to apply a predetermined load in biasing relation with said tines to resist coning of the brush on passage thereof past an obstruction.

4,353,144
UTILITY BRUSH
Sherry A. Mayberry, 1911 Pleasant Dr., Bastrop, La. 71220
Filed Apr. 28, 1980, Ser. No. 144,242
Int. Cl.³ A46B 13/02
U.S. Cl. 15—246 **8 Claims**



1. A utility brush comprising:

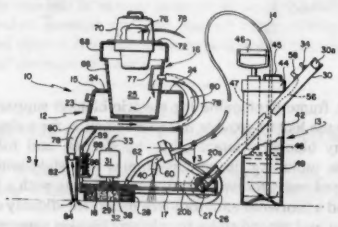
(a) a housing and a motor contained in said housing;

(b) shaft means having one end cooperating with said motor in rotatable relationship in said housing;

(c) brush means characterized by a generally cone-shaped brush having multiple bristles arranged in a top bristle cluster having a first selected diameter; a middle bristle cluster having a second selected diameter; a lower bristle cluster having a third selected diameter; and a bottom bristle cluster having a fourth selected diameter, said brush means removably carried by the opposite end of said shaft means and projecting beneath said housing for insertion in a toilet bowl; and

(d) mount bracket means attached to said housing and shaped to removably engage the rim of the toilet bowl and position said brush means rotatably in the toilet bowl.

4,353,145
RUG CLEANING APPARATUS
Frank W. Woodford, 452 W. Shore Rd., Warwick, R.I. 02889
Filed Jan. 29, 1981, Ser. No. 229,639
Int. Cl.³ A47L 11/03, 11/202
U.S. Cl. 15—321 **1 Claim**



1. An apparatus for the cleaning of rugs and the like comprising:

a. a main housing;

b. means for movably supporting said housing on a carpeted supporting surface;

c. handle means attached to said housing for effecting movement of said apparatus by an operator;

d. means attached to said housing for scrubbing a carpet when said apparatus is positioned thereupon;

e. means for dispensing cleaning solution to said scrubbing means;

f. means for spraying cleaning solution onto a section of carpet in the proximity of said scrubbing means when said apparatus is positioned on a carpet;

g. means for supplying heated, pressurized cleaning solution to said dispenser means and said spray means; and

h. vacuum means attached to said housing for vacuuming a carpet when said apparatus is positioned thereupon;

said vacuum means comprising a vacuum nozzle of elongated section extending transversely across one end of said housing, said scrubbing means being positioned within said housing spaced slightly interiorly of said nozzle, said spraying means being positioned within said housing on the opposite side of said scrubbing means from said nozzle whereby as said apparatus is moved over a carpet, the latter is sequentially spray cleaned, scrubbed and vacuumed.

4,353,146

BUTT HINGE

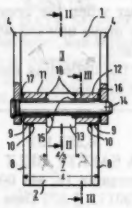
Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to Ed. Scharwachter GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,856

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851234; May 28, 1979, 2921521

Int. Cl.³ E05D *5/10*

U.S. Cl. 16—387 **17 Claims**



1. A butt hinge having a hinge axis and comprising a first hinge plate and a pair of axially spaced outer gudgeons extending outwardly from an edge of said first hinge plate extending generally parallel to and spaced laterally from the hinge axis, a second hinge plate and a single inner gudgeon extending outwardly from an edge of said second hinge plate extending generally parallel to and spaced laterally from the hinge axis with said inner gudgeon extending between and axially aligned with said outer gudgeons of said first hinge plate, said inner gudgeon of said second hinge plate being formed by two axially spaced inner gudgeon sections and with the adjacent ends of said inner gudgeon sections in combination with said edge from which said inner gudgeon sections extend defining a recess, said recess and said first plate edge being so dimensioned that when a a hinge pin extends through said pair of outer gudgeons of said first plate said two inner gudgeon sections of said second plate and said recess between said inner gudgeon sections for pivotally connecting said first and second hinge plates to provide the hinge axis only said hinge pin extends through said recess with said first plate edge being outside thereof, said pin being fixed against rotation with said outer gudgeons of said first plate, a bearing bushing within each of said inner gudgeon sections of said second plate for supporting said pin for rotational movement about its axis when said first plate is pivotally moved relative to said second plate about the hinge axis, said bearing bushings each projecting into said recess and located in spaced relation to one another in the axial direction of said hinge axis and said recess between said inner gudgeon sections extends for about one-third of the overall axial length of said inner gudgeon on said second hinge plate.

4,353,147

APPARATUS FOR STUNNING ANIMALS TO BE SLAUGHTERED, SUCH AS PIGS

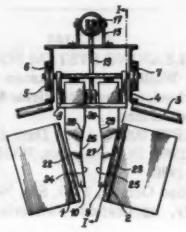
Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G. J. Nijhuis B.V., Netherlands

Filed Jun. 20, 1980, Ser. No. 161,298

Claims priority, application Netherlands, Jun. 25, 1979, 7904935

Int. Cl.³ A22B *3/06*

U.S. Cl. 17—1 E **3 Claims**



1. An apparatus for electrically stunning animals to be slaughtered, comprising:

two endless conveyors, said conveyors being operable to run parallel to each other and at a synchonized rate and being positioned to form a substantially V-shaped passageway between the operating surfaces thereof;

a pair of electrodes carried by a movable frame, said electrodes being insulated with respect to each other and being adapted to extend into said V-shaped passageway, said electrodes being further adapted to engage the head of the animal to be stunned and to clear said passageway; and

means for moving said movable frame, said means being adaptable to move said movable frame at said synchronized rate, the two electrodes being arranged side by side in said passageway, said electrodes being of such a shape and mounted in such a manner that they are operative to engage the sides of the head of the animal substantially at the same time.

4,353,148

ELECTRIC PRESSURE SWITCH

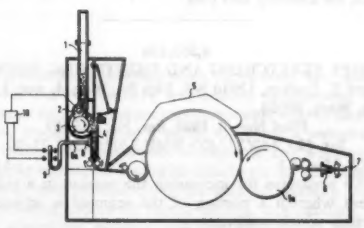
Wolfgang Beneke, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,561

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932291

Int. Cl.³ G01L *9/00*; D01G *15/40*

U.S. Cl. 19—105 **11 Claims**



1. An electric pressure switch, comprising means defining a pair of communicating vessels each having an upper end portion; a body of liquid in said vessels; means for connecting the

upper end portion of one of said vessels to a source of variable fluid pressure; means for detecting fluctuations in the upper level of liquid in at least one of said vessels which occur in response to variations of said fluid pressure, including at least two liquid level detectors arranged at two different vertically spaced levels; and mounting means supporting said detectors for joined displacement relative to and lengthwise of said one leg; said mounting means comprising a pair of carriages each mounting one of said detectors, and screw spindle means operatively connected with said carriages for jointly displacing the same.

4,353,149

FLAT CLEANING SYSTEM FOR A CARD

Robert Demuth, Wallisellen, and Anton Wüest, Winterthur, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

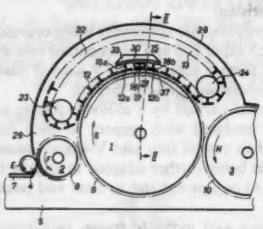
PCT No. PCT/EP79/00081, § 371 Date Jul. 7, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00980, PCT Pub. Date May 15, 1980

PCT Filed Oct. 22, 1979, Ser. No. 205,963

Claims priority, application Switzerland, Nov. 7, 1978, 11429/78

Int. Cl.³ D01G *15/82*

U.S. Cl. 19—107 **11 Claims**



1. A flat cleaning system for cards comprising a set of revolving flats, the individual flats not being in mutual contact, each flat having a T-shaped profile with legs on both sides of a web which extends towards the inside of the flat room formed by the set of flats, the legs supporting a point clothing on their working surface, and the group of flats located at the main drum being guided along the surface of the main drum;

a sealing element adapted to temporarily form an air tight seal between the room formed by the set of revolving flats and the particular neighboring flats the seal is temporarily disposed over;

said sealing element forming at least one duct between the neighboring flats as the set of flats revolve;

said sealing element including a fixed plate which hugs the curvature of the flat path in the direction of the flat movement and along which the free end of the web moves in order to form a sealing point; and

air stream generating means, coordinated to said at least one duct, for cleaning said flats.

4,353,150

ROPE STRETCHING AND TIGHTENING DEVICE

Richard E. Docken, 13910 NE. 14th St., Bldg. 4, Apt. 1, Bellevue, Wash. 98005

Filed Nov. 3, 1980, Ser. No. 203,157

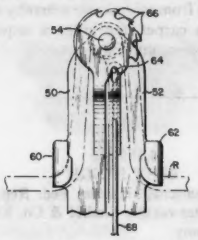
Int. Cl.³ A43C *11/00*; B66F *3/02*; B25B *25/00*

U.S. Cl. 24—71.1 **3 Claims**

1. An apparatus for increasing the tension in a taut rope segment wherein a portion of the segment is adjacent the apparatus, which comprises:

two elongated deflecting members, each deflecting member pivotally connected to the other at one end of each deflecting member such that the deflecting members are aligned longitudinally when in a neutral position and the pivotally connected ends of the deflecting members move upward with respect to the nonconnected ends when a downward force is applied to the nonconnected ends;

means for deflecting the portion of the rope segment adjacent the pivotal connection so that said portion will move upward with respect to the nonconnected ends of the deflecting members in conjunction with the pivotally connected ends of the deflecting members;



means for engaging the rope segment at locations adjacent at least one point on each deflecting member spaced apart from the pivotal connection and restraining motion of the rope segment away from such points so that the rope segment will remain adjacent to the such points on each deflecting member when the connected ends of the deflecting members move upward with respect to the nonconnected ends; and

means for securing the deflecting members at a plurality of angles relative to one another.

4,353,151

BUCKLE FOR A SAFETY BELT FOR VEHICLES

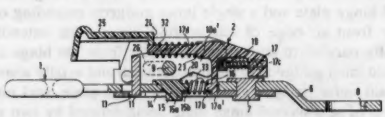
Leif Ennerdal, Glimmergatan 16, 441 00 Alingsas, Sweden

PCT No. PCT/SE79/00171, § 371 Date Apr. 15, 1980, § 102(e) Date Apr. 14, 1980, PCT Pub. No. WO80/00404, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 14, 1979, Ser. No. 193,262

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—230 A **10 Claims**



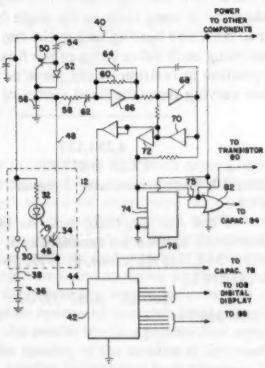
1. In a buckle for a safety belt for vehicles, which comprises a tongue-shaped insertion part and a sleeve-shaped receiving part forming a primary locking means, which is provided for locking the insertion part when it is in an inserted position in the receiving part, and for permitting its release from such a locked condition, the primary locking means being in the form of an arm, which is pivotable around a shaft which is parallel to the plane of the insertion part and perpendicularly arranged relative to the direction of movement of the insertion part in the receiving housing, the primary locking means being provided with at least one engaging pin serving the purpose in a first pivoting locking position to cooperate with a pin on the insertion part and lock the same to the receiving part, and in a second pivoting position to release the insertion part, the primary locking means being spring loaded in the releasing direction and provided with a stop dog which is in cooperation with a secondary locking means displaceable along the stop dog, arranged to impede the primary locking means from pivoting in the release direction into a displacing and locking position of the secondary locking means, whereas the secondary locking

means permits pivoting of the primary locking means into a second release position of displacement of the secondary locking means, the release of said primary and secondary locking means being actuated by a manually operated device, which is displaced in the direction of insertion of the insertion part, the improvement wherein the primary locking means comprises a double armed lever pivotable and extending on both sides of said shaft, one arm of said lever, which is directed outwardly toward the opening of insertion supporting said stop dog, which cooperates with the insertion part, and the inwardly directed arm of said lever supporting said stop dog cooperating with the secondary locking means, said last mentioned stop dog being formed by a surface which is faced in the same direction as the direction in which the projection supporting the stop dog cooperating with the insertion part is projected, said secondary locking means comprising a pin spring loaded from the inner portion of the insertion part, said pin being substantially parallel to the shaft of the primary locking means and against bias of said spring actuation by force displaceable past said stop dog cooperating with the same by means of an operating device, which is spring loaded in the same direction, the inner ends of the springs being supported by a common yoke located in the interior portion of the receiving part.

4,353,152
PULSE RATE MONITOR

Arthur H. O'Connor, Lancaster, and Robert A. Rossman, Leola, both of Pa., assignors to Novatec, Inc., Lancaster, Pa.

Filed Feb. 21, 1980, Ser. No. 123,351
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—689 **2 Claims**

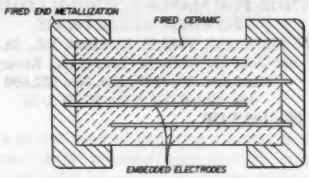


1. In a portable heart pulse rate monitor device of the type having a radiation source in proximity to a radiation sensor with the transmission of radiation between the source and sensor modulated by capillary blood flow of a finger placed in proximity to both the radiation source and radiation sensor; an electronic circuit to power the radiation source and radiation sensor and to amplify and process the sensor's output signal; and a display means to furnish the user with a direct reading of the user's pulse rate in beats per minute, the improvement comprising: a phototransistor acting as the radiation sensor and an active load connected to the phototransistor, the active load comprising a transistor with a unidirectional feedback circuit, connected between base and collector of the transistor, which favors signal variations from the quiescent operating level resulting from reductions in radiation received by the phototransistor, as opposed to signals resulting from increase in radiation to the phototransistor.

4,353,153
METHOD OF MAKING CAPACITOR WITH CO-FIRED END TERMINATIONS

Sri Prakash, Simpsonville, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 961,469, Nov. 16, 1978, Pat. No. 4,246,625.
This application Aug. 29, 1980, Ser. No. 182,501
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ H01G *13/00*
U.S. Cl. 29—25.42 **1 Claim**



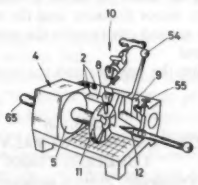
1. In a method of making a multielectrode ceramic capacitor by providing a green ceramic body containing a plurality of embedded electrodes, coating end portions of the green ceramic body with a paste containing finely divided metal particles and co-firing the green ceramic body and paste coating, the improvement which comprises employing as said paste a paste consisting essentially of a mixture, in an inorganic vehicle, of a finely divided metal selected from nickel and copper; glass frit, said glass being selected from barium borosilicate glass and barium aluminosilicate glass; and MnO_2; the properties by weight of the said metal, glass frit and MnO_2 being from about

80 to 95% metal
3 to 14% glass frit
1.5 to 3% MnO_2.

4,353,154
APPARATUS FOR WORKING PIPES

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,696
Int. Cl.³ B27C *9/02*; B23P *23/00*
U.S. Cl. 29—27 A **17 Claims**



1. An apparatus for working pipes, tubes, rods, bars, and the like, in the field of sanitary and heating installations, with electrometer drive, said apparatus comprising a drive machine as a basic machine having a motor including a swivel-head turning mechanism that drives workpieces and working devices rigidly connected therewith selectively for carrying out individually and collectively a plurality of working procedures, including means for thread-cutting, tube-bending, cutting-off, separating, welding, and pipe cleaning, at least one guide rod detachably and fixedly journalled in said drive machining for receiving a tool-carrier provided with at least one continuous bore with which said tool-carrier is mounted to be displaceably journalled on said at least one guide rod, a turning

device in the form of a swivel head including clamping for driving workpieces and devices for rotational working, a rotating drive connectible to said swivel head of said drive machine by a drive tube which includes a stand having at least one bore for displaceably journalling said stand on said at least one guide rod, said stand incliuding a cantilever provided with two rollers arranged in a plane and spaced sequentially from one another, one of said rollers being drivable by means including a belt which connects it with said drive tube, and also including a handle for adjusting the tension of said belt.

4,353,155

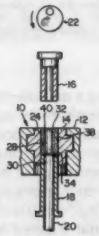
METHOD FOR MANUFACTURING COMPOSITE POWDER METAL PARTS

Arthur N. Hillebrand, 1046 E. Eschback Rd., St. Marys, Pa. 15887, and John D. Sterbank, Laurel La., Kersey, Pa. 15846

Filed Jun. 25, 1980, Ser. No. 162,690

Int. Cl.³ B21K *1/04*; B22F *3/24*

U.S. Cl. 29—149.5 DP **3 Claims**



1. A method of making a composite bronze bearing in a press having a die and die wall, a top punch and a bottom punch, both movable into the die, and a core pin having a distal section of a minor diameter and a trailing section of a major diameter, said core pin movable through the bottom punch into the die comprising:

A. positioning the core pin within the die cavity to form a first cavity between said major diameter, the die wall and the bottom punch;

B. filling the first cavity with one of iron or bronze powder;

C. sealing off the die cavity with the top punch;

D. simultaneously moving the die, top punch and core pin downward with respect to the bottom punch to compress the powder into a low density preform;

E. retracting the core pin so as to define a second cavity between its minor diameter and the die wall;

F. filling the second cavity with the other of iron or bronze powder; and

G. compacting the powder and the preform into a bearing.

4,353,156

MACHINE FOR POSITIONING VALVES ON RIMS FOR TUBELESS TIRES

Guy F. Rossz, Pontarlier, France, assignor to Scovill Inc., Waterbury, Conn.

Filed Sep. 5, 1980, Ser. No. 184,385

Int. Cl.³ B23P *13/00*

U.S. Cl. 29—221.5 **14 Claims**

1. A machine for positioning and fitting tire valves on series of wheel rims to be provided with tubeless tires, this machine being adapted to take into account the various parameters characterizing the specific rim type concerned, by means of pneumatic, electric and/or electronic control means for logically programming:

conveyor means for feeding a plurality of rims;

means for detaching a single rim from the series and positioning same in a waiting position, an operative position and a discharge position, respectively and successively;

means for exerting a pressure against the detached rim in order to push same in its plane from said operative position to a valve-fitting position for engagement with driving roller means;

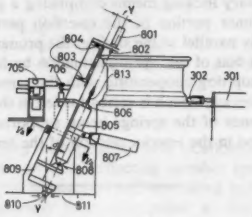
means for driving said roller means and consequently said detached rim in said valve-fitting position;

means for detecting the position of the valve hole of said rim in relation to an axis ZZ common to emitting and receiving elements of a photocell;

means for positioning the valve hole along an axis YY common to a centering spindle and to a insertion cylinder provided with a valve to be positioned;

means for selecting a valve for each rim;

means for positioning the selected valve and introducing same into the rim valve hole; and



means for holding the rim during the valve insertion, wherein the rims are caused to travel laterally in a plane parallel to the plane of symmetry of the rims; said detection means and valve hole positioning means differing from each other, the detection means being controlled and possibly corrected by the positioning means; the detection axis ZZ and the axis YY of the cylinder for introducing the valve into the valve hole forming therebetween an acute angle of same value as the angle from the perpendicular to the valve bearing face to the rim axis, the means for positioning each valve being of the floating type, its angular position in relation to the plane of symmetry of each valve varying from the fixed vertex of said acute angle.

4,353,157

CLIP DRIVER

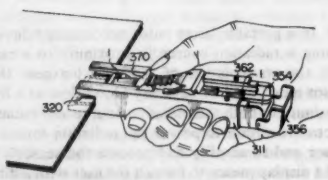
Hisao Sato, 10, Toyotamaminami-3-chome, Nerima-ku, Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,505

Claims priority, application Japan, May 1, 1979, 54-58424[U]; Sep. 5, 1979, 54-121869[U]; Nov. 9, 1979, 54-154806[U]; Dec. 3, 1979, 54-167224[U]

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—243.56 **23 Claims**



1. A clip driver for attaching a clip to sheets of paper or the like, said clip having a pair of opposing generally flat holding webs the front ends of which are resiliently pressed against each other to form opposing lips for clamping said sheets therebetween and at least one pair of opposing lugs, each projecting laterally from one of the side edges of each said holding web, said clip driver comprising: a casing; a guide way formed in said casing to extend longitudinally therethrough; an

inlet for charging said clip into said guide way in such a manner that said lips of said clip are directed toward the front end of said guide way; an outlet provided in the front end of said guide way for delivering said clip; and clip opening means disposed on at least one side of said guide way near the front end of the latter and having opposite guide surfaces gradually diverging toward said outlet, said pair of lugs of said clip being adapted to make sliding engagement with said guide surfaces, respectively, to open said clip during the forward movement of said clip along said guide way, and wherein said clip opening means consists of a member shaped like a tuning fork having a flat rear portion and two inclined leg portions bifurcated from said flat rear portion, wherein at least said inclined leg portions are made from a resilient member so as to be deflected toward and away from each other and said tuning-fork-like member is fixed to said casing at said flat rear portion.

4,353,158
METHOD FOR CONVERTING A LOCKSTITCH SEWING MACHINE TO A MACHINE FOR DECORATING FABRICS

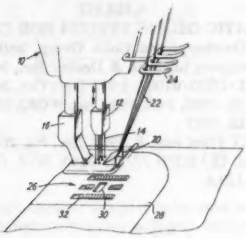
David E. Henshaw, Belmont, Australia, assignor to I.W.S. Nominee Company Limited, Ilkley, England

Continuation of Ser. No. 969,248, Dec. 13, 1978, abandoned. This application Mar. 26, 1981, Ser. No. 247,771

Claims priority, application United Kingdom, Dec. 16, 1977, 52391/77

Int. Cl.³ B23P *23/00, 17/04;* **B21K** *21/16;* **D04H** *18/00*

U.S. Cl. 29—401.1 **3 Claims**



1. A method for converting a lockstitch sewing machine to a machine for decorating fabrics of keratinous fibers with at least one untwisted strand of keratinous fiber applied in a pattern to the fabric, comprising the steps: (a.) removing the throat plate, feed dog, presser foot, bobbin, bobbin case and the needle bar from the machine; (b.) attaching to the machine a needle block having means for securing a plurality of needle punching needles therein to the needle mounting of a sewing machine; a throat plate apertured to correspond with the plural needles carried by the needle block; a presser foot apertured to correspond with the spacing of the needles in the needle block for passage of the needles therethrough; the presser foot provided with a guide passage for introduction of a fibrous strand between the throat plate and the presser foot; and a feed dog having sufficient clearance for the needles carried by the needle block.

4,353,159
METHOD OF FORMING SELF-ALIGNED CONTACT IN SEMICONDUCTOR DEVICES

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,620

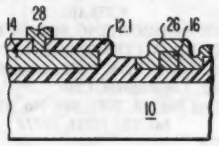
Int. Cl.³ H01L *21/28*

U.S. Cl. 29—571 **8 Claims**

1. In a method of making an MOS device having a first layer of insulating material formed on the surface of a semiconductor body, a conductive gate line disposed over a channel region and at least one conductive interconnecting line disposed on the surface of the insulating material, the improved process for forming buried contacts to the conductive line and to the gate line comprising the steps of:

growing the first layer of insulating material by the thermal oxidation of the semiconductor body;

forming a patterned layer of masking material, to a given thickness, to define contact areas on portions of the interconnecting line and on portions of the gate line;



growing a second layer of insulating material, to the given thickness, over the unmasked portions of the interconnecting line and over the unmasked portions of the gate line;

removing the masking material from the contact areas; and

depositing conductive material in each of the now formed buried contact areas in ohmic contact with the interconnecting line and with the gate line.

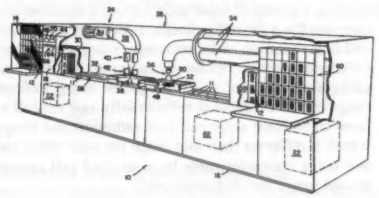
4,353,160
SOLAR CELL JUNCTION PROCESSING SYSTEM

Anthony J. Armini, and Roger G. Little, both of Bedford, Mass., assignors to Spire Corporation, Bedford, Mass.

Filed Nov. 24, 1980, Ser. No. 209,542

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 **16 Claims**



1. An integrated dry junction processing system for solar cells comprising:

(a) a unitary housing provided with a solar cell input lock and a solar cell output lock;

(b) means for maintaining said housing under vacuum said means including a number of cryogenic pumps;

(c) continuous means including a combination vacuum lock-solar cell transport system and an ion beam implanter and a pulsed electron beam annealer for forming p-n junctions in solar cells within said housing, said pulsed electron beam annealer including a plurality of transmission line capacitors disposed circumferentially about a central horizontal axis;

(d) said housing featuring process controls for said ion beam implanter and said pulsed electron beam annealer and including an ion beam current integrator for implant dose control.

16. A continuous, microprocessor-controlled process for the formation of p-n junctions in solar cells comprising:

(a) providing a plurality of semiconductor wafers integrally formed with one dopant material;

(b) loading a number of said wafers into cassettes;

(c) introducing said wafers with said cassettes via vacuum locks into a vacuum environment;

(d) removing said wafers from said cassettes and ion implant-

ing said wafers within said vacuum environment with a second dopant material;

(e) annealing said ion implanted wafers by pulsing said wafers with an electron beam of an annealer including a plurality of transmission line capacitors;

(f) reloading said annealed wafers into cassettes; and

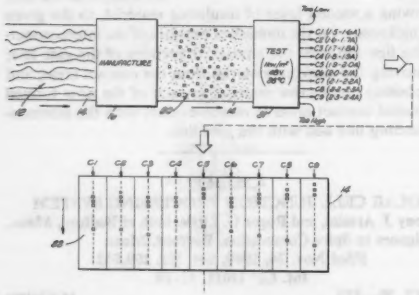
(g) removing said wafers with said cassettes via vacuum locks from said vacuum environment.

4,353,161

PROCESS FOR FABRICATING SOLAR TO ELECTRICAL ENERGY CONVERSION UNITS

Gary B. Turner, Canoga Park, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 18, 1981, Ser. No. 274,961
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **14 Claims**



1. A process for fabricating solar to electrical energy conversion units, comprising the steps of:

providing a group of solar cells having a distribution of cell currents for a set cell voltage, a set level of incident solar cell face radiation and a set temperature, each of said solar cells being capable of classification into one of a number of categories, each of said categories being defined by a range of cell currents at substantially said set cell voltage, level of incident solar cell face radiation and temperature which is different than said range for each other category, and being characterizable by a selected cell current level in said range for said category;

selecting a goal array current range for a number of arrays of solar cells;

for each said array, forming parallel-connected strings of series-connected solar cells from a plurality of said categories, each string in said array consisting of cells from a single category, having the same number of cells as each other string in said array and being characterizable by said selected cell current level for said category, said array having characterizable currents for said parallel-connected strings which sum to a level within said selected goal array current range for said arrays.

4,353,162

APPARATUS AND PROCESS FOR MANUFACTURING FINNED TUBES

Johannes Van Meteren, Roelofarendsveen, Netherlands, assignor to The Lummus Company, Bloomfield, N.J.

Filed Jan. 26, 1979, Ser. No. 6,738
Int. Cl.³ B21C *37/26*
U.S. Cl. 29—727 **26 Claims**

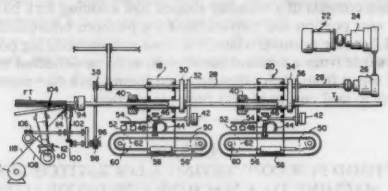
1. An apparatus for forming a finned tube from a bare tube which comprises:

at least two tube feed units, each of said tube feed units having a bare tube clamping means;

means for rotating said bare tube clamping means, said bare tube clamping means being caused to rotate prior to clamping of said bare tube;

sprocket and rack assembly means for linearly moving each of said tube feed units between a tube contact position and a tube release position;

means for returning said tube feed units from said tube release position to said tube contact position, said means for moving and returning said tube feed units being synchro-



nized in a manner to continuously move said bare tube through said apparatus;

means for supplying a strip of a finning material;

means for deforming said strip of finning material into a helical coil;

means for forming said helical coil about said bare tube; and

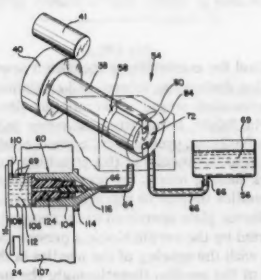
means for supporting said tube during forming of said fin about said bare tube.

4,353,163

AUTOMATIC OILING SYSTEM FOR CHAIN SAW

Douglas G. Overbury, and Colin Overy, both of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

PCT No. PCT/US80/01008, § 371 Date Oct. 30, 1980, § 102(e) Date Oct. 30, 1980, PCT Pub. No. WO82/00508, PCT Pub. Date Feb. 18, 1982
PCT Filed Aug. 8, 1980, Ser. No. 201,416
Int. Cl.³ B27B *17/12*; F16N *7/14, 13/22*
U.S. Cl. 30—123.4 **6 Claims**



1. A valve assembly for an oil pumping system of a chain saw having a guide bar comprising:

(a) a housing having a passage therethrough in communication between the guide bar and the oil pumping system,

(b) an adjustment member connected in the passage of the housing to regulate the quantity of oil delivered to the guide bar,

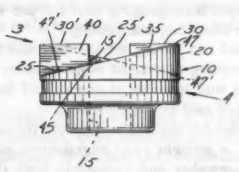
(c) said member having a longitudinal opening therein through which the oil is delivered to the guide bar, and

(d) a check valve operatively disposed in the passage of the housing and having an open position permitting oil flow, and a closed position stopping oil flow whenever the oil pumping system is off,

(e) the check valve in the open position to coact with the adjustment member to define a transition section to regu-

late the flow of oil into the opening of the adjustment member from which the flow exits the valve assembly,
(f) the adjustment member defining a screw threadedly received in the housing,
(g) the screw having a slotted head disposed externally of the housing whereby rotation thereof changes the transition section,
(h) the longitudinal opening extending through the screw to open into and communicate with the slotted head thereof,
(i) the upstream side of the passage having a restriction therein,
(j) the check valve having a head positionable to close the restriction and prevent communication from the passage to the upstream side,
(k) a spring biasing the check valve toward the restriction and yieldable to permit a pre-set opening of the head upon oil being pumped by the pumping system, and
(l) the check valve having a stem extending from the head in the direction of the downstream side.

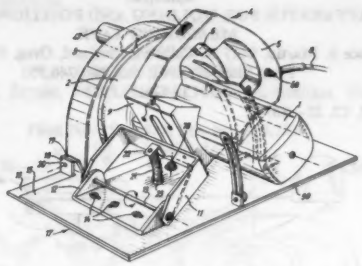
4,353,164
DRAW PUNCH
Wayne Linquist, and Vernon Pearson, both of Rockford, Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.
Continuation of Ser. No. 59,869, Jul. 23, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,809
Int. Cl.³ B26F *1/00*
U.S. Cl. 30—360 **6 Claims**



1. A male punch member adapted to be used with a cooperating female member to remove a slug in two pieces from a workpiece, comprising a body having an axial bore extending longitudinally therethrough for receiving means for moving said body inwardly and outwardly with respect to the female member, said body having cutting means at one end thereof, said cutting means being comprised a pair of inclined surfaces disposed around said bore and sloping upwardly in opposite directions from one another, said inclined surfaces each having a cutting edge on the entire edge of the outermost portions thereof, each inclined surface terminating at an uppermost end in a rib member extending laterally across said surface from said cutting edge to said bore and upwardly from said surface at said uppermost end, the rib members together forming lateral cutting means extending across said one end of said body except for said bore, whereby the cutting edges of said outermost portions cut the outer slug periphery and the rib members cut across the slug to split it into two pieces when the male member is forced inwardly of the female member with the workpiece therebetween.

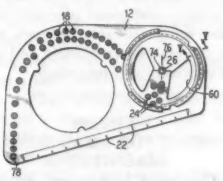
4,353,165
SAW
William Albery, 8 Delamere Rd., Gatley, Cheshire, England
Filed Sep. 18, 1980, Ser. No. 188,405
Claims priority, application United Kingdom, Sep. 19, 1979, 7932486; Apr. 15, 1980, 8012338
Int. Cl.³ B27B *9/02*
U.S. Cl. 30—376 **13 Claims**

1. A saw comprising:
a rotatable saw blade,
a base having a guide edge,
means for pivotally mounting the saw blade on the base about an axis perpendicular to the plane of the base, said perpendicular axis being close to the axis of rotation of the blade, and



means for shifting the saw blade about said perpendicular axis between a position in which the plane of the saw blade is parallel to the guide edge of the base and a position in which the plane of the saw blade is slightly angled with respect to the guide edge of the base.

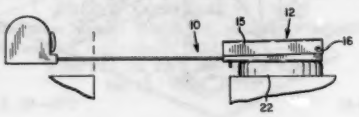
4,353,166
TOY-LIKE INSTRUMENT FOR DRAWING CIRCLES
John S. Kettlestrings, 907 N. President St., Wheaton, Ill. 60187
Filed Oct. 24, 1980, Ser. No. 200,397
Int. Cl.³ B43L *9/04*
U.S. Cl. 33—27 C **6 Claims**



1. A device for drawing circles comprising;
a sheet-form member having a planar upper surface and a planar lower surface,
a circular hole formed in said sheet form member and having a given diameter,
alternating upper and lower lips positioned around the circumference of said hole,
said lower lips projecting radially inwardly and having a bottom wall coplanar with said lower surface of said sheet-form member, a top surface below said upper surface of said sheet form member, and terminating in an inner circumferential wall,
said upper lips having a lower surface elevated above said upper surface of said sheet form member and a top surface which slopes downwardly and radially inwardly to terminate in an inner circumferential wall,
a circular disk having a diameter less than said diameter of said hole and greater than the diameter of said inner circumferential walls of said upper and lower lips,
said disk having a flange formed at the circumference of said disk having a top surface coplanar with a top surface of said disk and a bottom surface at an elevation above a bottom surface of said disk
said disk and said sheet-form member having a series of spaced holes therein to accommodate a marking point and being spaced at selected specific calibrated intervals,
whereby said disk can be inserted into said hole in said sheet-

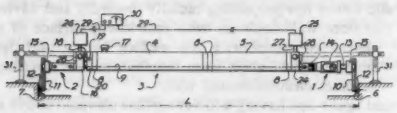
form member and will be rotatably retained therein by said upper and lower lips.

4,353,167
APPARATUS FOR HOLDING AND POSITIONING A MEASURING TAPE
Bruce S. Martin, 9427 N. Calhoun, Portland, Oreg. 97203
Filed Mar. 30, 1981, Ser. No. 248,951
Int. Cl.[3] G01B 3/02
U.S. Cl. 33—137 R 7 Claims



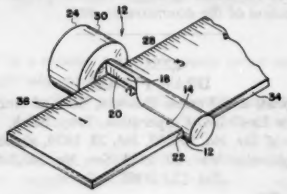
1. Apparatus for holding and positioning the zero end of a flexible metal measuring tape having a downwardly extending tab at the end thereof comprising:
(a) a base, including means for securing said base releasably to a planar work surface;
(b) clamping means associated with said base for receiving and securing the measuring tape in a manner such that the extremity thereof is located in a defined position;
(c) pivot means for allowing the measuring tape to rotate relative to said base about an axis which is perpendicular to said work surface; and
(d) wherein said clamping means comprises;
(1) a receptacle having an open top arranged to receive the tape therein said receptacle being rotatably joined to said base,
(2) a cover for enclosing the top of said receptacle,
(3) means joining said cover pivotally to said receptacle said cover being movable between a closed position where it covers said receptacle and an open position where it uncovers said receptacle.

4,353,168
INSTRUMENT FOR MEASURING LINEAR MAGNITUDES
Serge Ginggen, Chavannes, Switzerland, assignor to Tesa S.A., Renens, Switzerland
Filed Mar. 5, 1981, Ser. No. 240,866
Claims priority, application Switzerland, Mar. 11, 1980, 1884/80
Int. Cl.[3] G01B 7/02
U.S. Cl. 33—147 H 7 Claims



1. An instrument for measuring large linear magnitudes comprising:
(a) a measurement head;
(b) a fixed stop;
(c) a body connecting said measurement head and fixed stop, said body formed of interchangeable extension pieces;
(d) gauge rods aligned and incorporated within said extension pieces, said gauge rods resiliently biased against each other;
(e) a measurement feeler borne by said measurement head, and a measurement feeler borne by said fixed stop, each of said measurement feelers being formed by an arm and said arms being parallel to each other, whereby said arms are contained in a plane;
(f) a contact stop fastened on each of said arms in a position offset with respect to the alignment of said gauge rods;
(g) means for checking the inclination of the two measurement feelers in the plane containing said feelers forming parallel arms; and
(h) means for adjusting the inclination of at least one of said measurement feelers in said plane.

4,353,169
MULTIPLE HOLE GAUGING TOOL
Ernest M. Mitchell, Tulsa, Okla., assignor to Rodney M. Mitchell, Tulsa, Okla.
Filed Jun. 20, 1980, Ser. No. 161,421
Int. Cl.[3] G01B 5/14
U.S. Cl. 33—173 7 Claims



1. A multiple hole gauging tool for use with a variety of straight edge members, comprising:
an elongated rod having a transverse slot aperture for slidably receiving a straight edge member therethrough, a threaded stud member at one end of the rod adjacent a first end of said slot aperture,
a cap member having a threaded bore for receiving said stud member, a straight edge engagement surface carried by the cap member and engagable with the straight edge member for locking said rod in place along the straight edge, a smooth cylindrical hole engagement surface carried by the cap member and defining the outer peripheral surface thereof, said rod providing indicating means relating the axis of said cap member cylindrical hole engagement surface with a straight edge received in said rod.

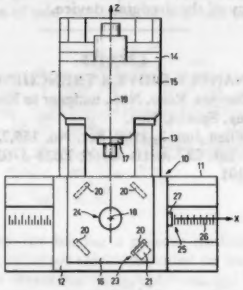
4,353,170
APPARATUS FOR POSITIONING A WORKPIECE
Armin Jordan, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland
Filed Nov. 17, 1980, Ser. No. 207,657
Claims priority, application Switzerland, Dec. 4, 1979, 10764/79
Int. Cl.[3] G01B 7/28
U.S. Cl. 33—174 TA 6 Claims

1. An apparatus for positioning a workpiece which is to be machined upon a machine tool, especially a horizontal drilling machine, in order to produce a continuous bore at the workpiece, wherein part of the bore is machined from one side of the workpiece and the remaining part of the bore from the opposite side of the workpiece and following the machining operation both parts of the bore are in alignment with one another, comprising:
a rotatable table having an axis;
a first slide upon which said rotatable table is displaceable in an X-direction;
a second slide;
a work spindle having an axis;
said work spindle being displaceable upon said second slide in a Y-direction;
said first slide having a starting position at which the axis of the rotatable table intersects with the axis of the work spindle;

a first measuring device for enabling rotating the rotatable table through any desired angle;

a second measuring device for enabling displacing the rotatable table through any desired amount in the X-direction;

a third measuring device for enabling adjusting the individual angles of the rotatable table more exactly than by means of the first measuring device;



a fourth measuring device for measuring the starting position of the first slide in relation to the work spindle; and

said fourth measuring device in conjunction with said second measuring device enabling adjustment of the axis of the rotatable table in relation to the axis of the work spindle at a common intersection point.

4,353,171

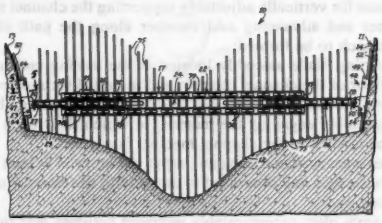
PROFILE PATTERN FOR A WEIR

A. Barry Spears, Lebanon, Tenn., assignor to J. R. Wauford and Company, Consulting Engineers, Inc., Nashville, Tenn.

Filed May 15, 1981, Ser. No. 264,025

Int. Cl.³ G01B *5/00, 5/20*

U.S. Cl. 33—174 G **10 Claims**



1. A weir pattern device for conforming to the profile of a liquid flow channel having a bottom surface and opposite side surfaces, comprising:

(a) an elongated body having opposite first and second end portions,

(b) at least one elongated wing member having a free end portion and an opposite end portion,

(c) means on said body slidably receiving said wing member for relative longitudinal movement so that said free end portion may project beyond said first end portion in an operative position in which said body and said wing member extend transversely of a flow channel,

(d) a plurality of elongated profile rods, each having a bottom end,

(e) retainer means on said body and said wing member for receiving and holding said profile rods in slidably adjusted parallel vertical operative positions, so that when said body and said wing member are disposed in their transverse operative positions, said bottom ends may be positioned to engage the bottom surface of the channel, and

(f) side bearing means mounted relative to said body for engaging the opposite side walls of the channel, in operative position.

4,353,172

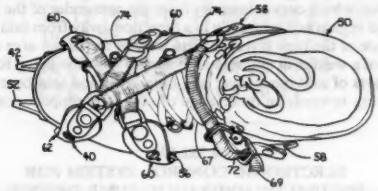
CRAMPON BINDING

Mark K. Bryant, 23709 65th Ave. Ct. East, Graham, Wash. 98338

Filed Nov. 10, 1980, Ser. No. 205,747

Int. Cl.³ A43B *3/10*

U.S. Cl. 36—7.6 **5 Claims**



1. A crampon binding for holding crampons on mountaineers' boots, comprising:

(a) pairs of elongated extensioners adapted to extend from securement locales on crampons which in use become located alongside sides of soles of mountaineers' boots, upwardly to boot lacing locales, each extensioner of all of the paired extensioners increasing in width along the extensioner between each securement locale on a crampon and each boot lacing locale to create a larger area of the extensioner for the transfer of compression binding forces to a mountaineer's boot;

(b) fasteners adapted to attach the elongated extensioners to a crampon at a securement locale;

(c) continucus webbed lacing adapted to removably secure the crampon to a mountaineers's boot by securing this continuous webbed lacing to each of the elongated extensioners at a boot lacing locale; and

(d) fasteners to secure the continuous webbed lacing to each of the elongated extensioners at a boot lacing locale.

4,353,173

INSOLES FOR SKATE BOOTS

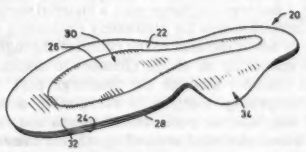
Benoit Paquet, St. Jean, Canada, assignor to Canada Cycle and Motor Company Limited, Weston, Canada

Filed May 31, 1979, Ser. No. 44,276

Claims priority, application Canada, Aug. 8, 1979, 327199

Int. Cl.³ A43B *13/38, 5/16;* A43C *13/14*

U.S. Cl. 36—44 **6 Claims**



1. An insole for a skate boot, the insole being of laminated construction and comprising: a base layer moulded in a relatively rigid plastic material and having a profile corresponding generally to the shape of a human foot and of a size appropriate to the required boot size, the base layer having an inner surface smoothly contoured to generally follow the contours of the

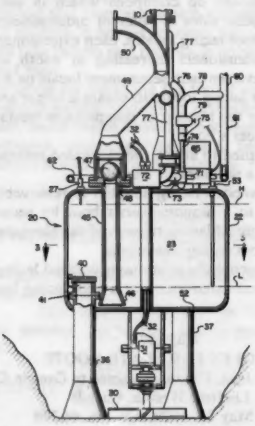
sole of a wearer's foot, and an outer surface having a raised central portion which extends longitudinally of said surface and provides a strengthening spine for the insole, said raised central portion having a profile which follows the profile of said base layer and defines a relatively flat peripheral surface portion around said central portion which is of substantially uniform width throughout its extent and onto which the margin of a lasted upper can be secured in constructing a boot, said raised central portion having a thickness corresponding generally to the thickness of said margin and extending over substantially the entire length of the insole except for said margin; and an inner layer of a relatively resilient material secured to and covering the inner surface of said base layer so as to provide a bearing surface for a wearer's foot; the insole further including, in the instep region of the insole, an integral arch support portion which curves laterally from the remainder of the insole in said region and upwardly in a direction away from said outer surface of the base layer, so as to overlie the instep area of the foot of a wearer in use, said arch support portion being formed by parts of said inner layer and base layer and said base layer tapering towards an outer edge of said arch support portion.

4,353,174

ELECTRONIC CONTROL SYSTEM FOR PNEUMATIC-HYDRAULIC PUMP DREDGE

Richard Maloblocki, Hinsdale, Ill., assignor to Amtec Development Company, Highland Park, Ill.

Filed Aug. 11, 1980, Ser. No. 176,924
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—58 **10 Claims**



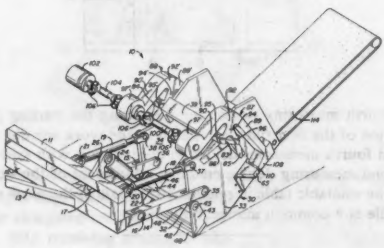
1. A control system for a dredging device comprising a plurality of chambers, each chamber including an air port through which air can be delivered to and exhausted from the chamber, a material discharge port, a material suction port, and air port control means for alternately exhausting air from the chamber to admit material to the chamber through the suction port and delivering air to the chamber to discharge material from the chamber through the discharge port, said control system comprising: electrically energizable actuator means coupled with said air port control means and responsive to predetermined electrical control signals for causing actuation of said air port control means to a first position for said exhausting of air from the chamber, to a second position for said delivering of air to the chamber and to a third, intermediate position for effectively closing off the chamber to either air delivery or air exhaust, and electronic control means for providing said predetermined electrical control signals in a preselected cycle for cyclically operating all of said air port control means for admitting material to each chamber and discharging material from each chamber in said preselected cycle comprising the operation of the air port control means of each of said chambers in a time-staggered sequence with respect to that of each of the other chambers, whereby to provide a relatively uniform flow of material from the dredging device, said electronic control means further including controllable timer means for regulating said preselected cycle and operator adjustable control means for selectively varying said controllable timer means during operation of said dredging device so as to regulate said preselected cycle to achieve and maintain optimum efficiency of the dredging device.

4,353,175

RESONANTLY DRIVEN TRENCHING TOOL

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.

Filed Jun. 2, 1980, Ser. No. 155,739
Int. Cl.³ A01B *35/00*; E02F *5/02*
U.S. Cl. 37—101 **16 Claims**



1. A resonantly driven tool for forming a trench in a base material such as earth, said tool comprising:

a channel member adapted to be aligned with the path of the trench to be formed and having a floor inclined upwardly toward the rear, oppositely disposed sides projecting upwardly from the floor, and being open at the front and having an opening toward the rear;

means for vertically adjustably supporting the channel member and advancing said member along the path of the trench to be formed;

a cutting blade assembly located at the leading end of the floor of the channel member and mounted for reciprocating motion relative to said leading end, said cutting blade assembly engaging the material in which the trench is to be formed as the channel member is advanced;

a resonant system having an output vibratory in at least near resonance and supported to move with the channel member; and

an anvil plate reciprocatably mounted between said output of said resonant system and said cutting blade assembly so that said resonant system is able to drive the cutting blade assembly intermittently forwardly to dislodge the material so that the dislodged material is excavated by the channel member.

4,353,176

SNOW REMOVAL DEVICE WITH GAS BURNER HEATING CHAMBER

Georgia E. Hess, 910 N. Madison, Benton, Ill. 62812

Filed Feb. 5, 1981, Ser. No. 231,622
Int. Cl.³ E01H *5/10*
U.S. Cl. 37—228 **5 Claims**

1. A snow removal device, which comprises:

a. a truck unit having a forward cab portion and a rear storage portion;

b. an elongated V shaped container disposed in said storage unit, said V shaped container having a curved base, a pair of upwardly extending sidewalls, and a pair of upwardly

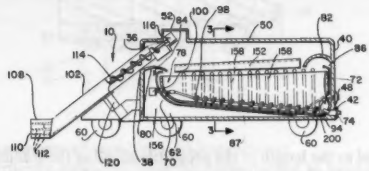
extending end walls, said container being slanted downwardly from a front to a rear of said storage portion;

c. means for injecting snow and ice into said container;

d. a gate valve disposed in said rear storage portion;

e. a connecting pipe joining said container to said gate valve;

f. means for melting said snow in said container comprising a plurality of pipes disposed on an outer surface of said container, said pipes coupled together at one end thereof, at least one gas burner disposed in said rear storage portion, flames of said burner being disposed in said one end



of said pipes for heating a gaseous medium within said pipes, heat deflector shields mounted on interior surfaces of the walls of said rear storage portion, said heat deflector shields extending over said side and said end walls of said V shaped container, said heated gaseous medium being directed from the other ends of said plurality of pipes to impinge into the uppermost regions of said V shaped container; and

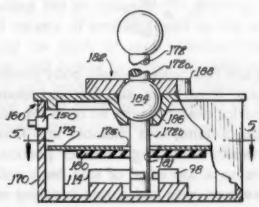
g. means for ejecting a mixture of water formed from said snow and unmelted said snow from said container through said gate valve.

4,353,177

CONTROL FOR SNOWPLOW BLADE

Ralph W. Hoekstra, Stillman Valley, Ill., assignor to Swenson Spreader Company, Lindenwood, Ill.

Filed Sep. 2, 1980, Ser. No. 183,283
Int. Cl.³ E01H *5/04*
U.S. Cl. 37—234 **8 Claims**



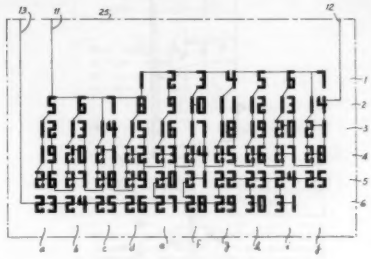
1. Control apparatus for a snowplow blade or the like, comprising: a housing, a control shaft, means forming a joint for movably mounting said control shaft to said housing, said control shaft having first and second end portions extending respectively inwardly and outwardly of said housing, a control circuit, means in said housing for mounting said control circuit, switch means electrically coupled with said control circuit and mounted in said housing for selective actuation by said first control shaft end portion and resilient means in engagement with said first control shaft end portion for resiliently returning said control shaft to a predetermined neutral position, wherein said resilient means comprises a sheet of elastomeric material having a through opening grippingly engaging said control shaft and wherein said means for mounting said control circuit comprises a circuit board mounted in said housing intermediate said means forming a joint and said resilient means and having a through opening in registry with said sheet through opening but of substantially greater area so as not to engage said control shaft.

4,353,178

CALENDAR DISPLAY DEVICE

Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 121,068
Int. Cl.³ G09D *3/00*; G04B *19/24*
U.S. Cl. 40—107 **20 Claims**



1. In a calendar display device including first and second spaced and opposed electrode patterns having overlapped portions, and a liquid crystal material sandwiched between said electrode patterns, the improvement there comprising:

the overlapped portions of said opposed electrode patterns forming six rows and ten columns of numerals, said numerals being consecutive in each said row, so much of said electrode patterns defining a unit or ones digit of each numeral being respectively commonly driven, a portion of the numerals having two digits having a tens digit formed of a plurality of electrodes for display, said plurality of electrodes being adapted for driving in at least two groups, selection among said groups causing said tens digit to be selectively displayed as one of at least two numerals;

circuit means for selecting and driving said electrodes for display or non-display, said circuit means being adapted to select either the upper five rows or lower five rows of said six rows for driving, and to select consecutive columns for driving to display calendar months, the left-side column of the displayed month being a selected day of the week regardless of which calendar month is displayed.

4,353,179

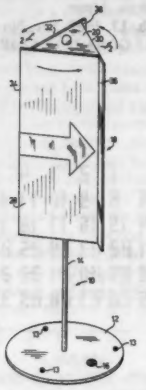
ROTATABLE SIGN

Hugh F. Jennings, 83 Anstead Crescent, Ajax, Ontario, Canada (L1S 3X4)

Filed Jun. 9, 1981, Ser. No. 271,904
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—479 **7 Claims**

1. A rotatable sign adapted to be driven by air currents comprising support means having a shaft portion adapted to be mounted in an upright position, and a rotor mounted for rotation on said shaft portion, said rotor including spaced-apart equilateral triangular end panels of the same size each having a central opening concentric with the other, three rectangular side panels extending between and secured at each end to a side of said end panels to form a closed box structure, each of said side panels extending laterally beyond a side edge of an adjacent side panel to define a vane at each juncture of the side panels, a pair of removable bearing means each having a bayonet connection mounted in the central openings of the end panels adapted to be quickly interchanged to permit inversion of the rotor, one of said bearing means comprising a sleeve bearing for loosely receiving the shaft portion therein for facile rotation and the other of the said bearing means comprising a dome closure for loosely receiving the end of the shaft portion

therein for vertical support and rotation of the rotor, and indicia formed on at least two of the side panel faces out of

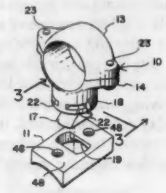


axial alignment with each other for presenting said indicia on an alternating level as the sign rotates.

4,353,180
FIT ADJUSTABLE TELESCOPE MOUNT FOR FIREARMS

Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176

Filed Apr. 7, 1980, Ser. No. 138,145
Int. Cl.³ F41G *1/38*
U.S. Cl. 42—1 ST **11 Claims**



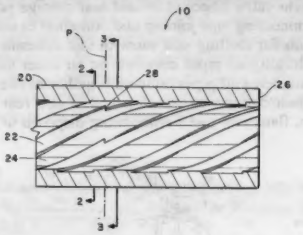
1. A telescope mount for firearms comprising:
holding means for holding a telescope,
lug means mounted on said holding means for attachment to a base,
base means for attachment to a firearm, said base means having a cavity therein for receiving said lug means, said lug means being adaptable for vertical insertion into said cavity and being rotatable to a locked position within said cavity to hold said holding means and said base means closely together in a mated relationship,
movable tensioning means comprising a deflectable wing mounted on said holding means for varying the degree of tightness between said holding means and said base means, said movable tensioning means being movable toward and away from said base means.

4,353,181
ELASTIC REBOUND COMPENSATOR FOR RIFLED GUNBARRELS

John S. Pedgonay, P.O. Box 127, Aberdeen, Md. 21001

Filed Apr. 27, 1978, Ser. No. 900,484
Int. Cl.³ F41F *17/10*
U.S. Cl. 42—78 **2 Claims**

1. In a barrel with spiral rifling for imparting spin to an elongate projectile with a trailing seal, the spiral rifling including longitudinal lands reduced in width at the muzzle end, the improvement comprising: said reduction in width being on the side of the lands imparting spin to the projectile and extending a distance along the barrel to the muzzle end substantially

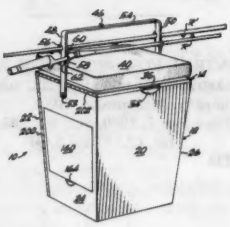


equal to the length of the projectile ahead of the trailing seal of the projectile, and said reduction in width being substantially a step-reduction substantially uniform in width.

4,353,182
FISHING BOX

Ronald J. Junkas, 137 Ridge La., Geneva, Ill. 60134, and Robert W. Kyes, P.O. Box 373, Bativia, Ill. 60510

Filed Jan. 19, 1981, Ser. No. 226,400
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—54.5 R **27 Claims**

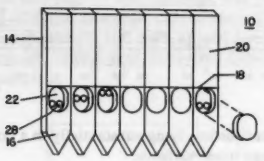


1. A fishing box comprising a main body portion including a bottom wall, and front, back, and first and second side walls, defining an interior chamber with an open top end; a generally vertical septum dividing said chamber into first and second, generally vertically extending chamber portions, a main lid hinged relative to a top edge of said back wall for pivotal movement betweeen open and closed positions relative to said first and second chamber portions; means to support first and second compartmented fishing tackle trays in respective upper end portions of said first and second chamber portions; a second lid pivotally supported in said first chamber portion, intermediate said first tackle tray and bottom wall, and means to seat said lid in a generally horizontal position in a closing relation to a bottom portion of said first chamber portion, and hand grip means carried atop said second lid to swing same from said closing relation to a full open position, relative to said bottom portion; a generally horizontally extending partition, fixed in a closed spanning relation to said second chamber portion, intermediate said bottom wall and second tackle tray, defining a bottom portion of said second chamber portion; a live bait box defining an interior live bait chamber and including an access lid means to said live bait chamber, said live bait box being sized for sliding passage through an access opening through a bottom end portion of said second side wall into said bottom portion of said second chamber portion; seat cushion means for removable fixed attachment atop said main lid, and handle means for pivotal attachment relative to upper end portions of said first and second side walls.

4,353,183
SEED MARKER TABS

Michael H. Estkowski, 1756 Outer Dr., St. Joseph, Mich. 49085

Filed Sep. 2, 1980, Ser. No. 182,950
Int. Cl.³ A01C 1/04
U.S. Cl. 47—56 7 Claims



1. An improved seed mark tab comprising:

a vertically elongated rigid tab proportioned to have a first lower end portion thereof driven into soil to a predetermined level with a second upper end portion thereof projecting above the soil,

said tab being formed of biodegradable material sufficiently rigid so as to be self-supporting when inserted into a planting medium,

a planting line dividing said tab into said lower and upper end portions,

a seed placement volume defining means having at least one vertical side, said seed volume defining means provided on the lower end portion of the tab,

backing means provided on the volume defining means to close said one vertical side of the seed placement volume defining means to define an area for receiving seeds,

the backing means having a pattern of at least two seed-locating-and-receiving openings extending therethrough,

such seed-locating openings of selected number and of a size which precludes seed passage to position the type of seed received on each of said openings,

such openings selectively located vertically with respect to the planting line to optimize the planting depth for each selected variety of seed mounted on the seed marker tab,

seed placed on each of said seed-locating-and-receiving openings, and means to cover the seed received in said openings and within said volume defining means to hold each seed in the positions determined by the locations of the openings in the backing means of the seed marker tab.

4,353,184
METHOD FOR ASEXUAL REPRODUCTION OF CONIFEROUS TREES

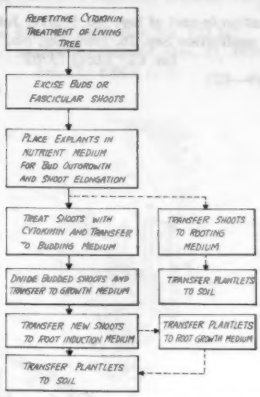
Mostafa M. Abo El-Nil, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 18, 1981, Ser. No. 263,969
Int. Cl.³ A01G 1/00
U.S. Cl. 47—58 20 Claims

1. A method for asexually reproducing coniferous trees which comprises:

a. repetitively treating living trees with a cytokinin until buds or shoots are induced at locations where vegetative buds do not normally form, the number of treatments and intervals between treatments being selected so as to produce buds giving rise to shoots having predominantly juvenile-type morphology;

b. excising the juvenile-type buds or shoots from the trees; and

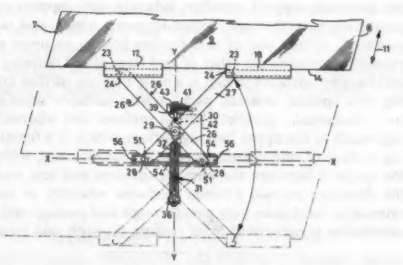

REPETITIVE CYTOKININ TREATMENT OF LIVING TREE
EXCISE BUDS OR FASCICULAR SHOOTS
PLACE EXPLANTS IN NUTRIENT MEDIUM FOR BUD OUTGROWTH AND SHOOT ELONGATION
TREAT SHOOTS WITH CYTOKININ AND TRANSFER TO BUDDING MEDIUM
TRANSFER SHOOTS TO ROOTING MEDIUM
DIVIDE BUDDED SHOOTS AND TRANSFER TO GROWTH MEDIUM
TRANSFER PLANTLETS TO SOIL
TRANSFER NEW SHOOTS TO ROOT INDUCTION MEDIUM
TRANSFER PLANTLETS TO ROOT GROWTH MEDIUM
TRANSFER PLANTLETS TO SOIL

c. placing the excised tissue on a growth medium in order to maintain the juvenile condition and elongate shoots suitable for rooting or further multiplication in tissue culture.

4,353,185
WINDOW RAISER

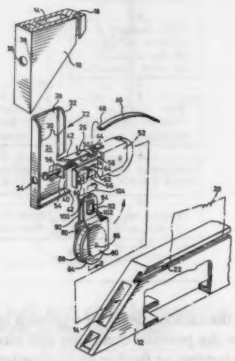
Gerard Saigne, Larche, France, assignor to Paumellerie Electrique, France

Filed Apr. 30, 1980, Ser. No. 145,325
Claims priority, application France, May 4, 1979, 79 11302
Int. Cl.³ E05F 11/44, 11/40, 11/48
U.S. Cl. 49—351 16 Claims



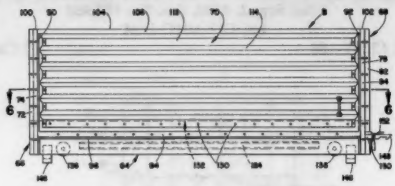
1. A window raiser comprising two crossed arms of equal length which are disposed symmetrically relative to a substantially vertical axis, each arm having at one end of the arm a member mounted thereon, a rectilinear slideway which is rigid with a base of the window being provided for each member and guidingly engaged with the member, a common articulation for the two arms at a crossing point of the arms, a slide carrying the articulation, a slideway having an axis coinciding with the axis of symmetry of the two arms and guidingly engaging the slide, a roller carried by an end of each arm which is remote from the corresponding slideway of the base of the window, and two fixed slideways respectively guidingly engaging the two rollers and having an axis which is perpendicular to the axis of the slide-guiding slideway and defines a centre line on each side of which centre line the two arms are capable of undergoing movements.

4,353,186
RUNNER WHEEL ASSEMBLY
Hermoff F. Offterdinger, 602 Galway Dr., Burlington, Ontario, Canada
Continuation-in-part of Ser. No. 59,012, Jul. 19, 1979. This application Sep. 26, 1980, Ser. No. 191,120
Int. Cl.³ E05D *13/02*
U.S. Cl. 49—420 **9 Claims**

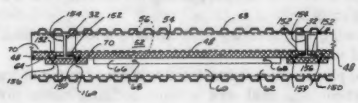


1. In a sliding door comprising a bottom frame element of hollow cross section, having an opening in a bottom surface of said frame element extending to a hollow portion of said section, the provision of a wheel retainer member received within the said hollow portion, a wheel rotatably mounted in a support member, said support member being movably mounted on said retainer member and rotatable between one orientation in which it projects through said opening to support said door in its sliding movement and in which it is retained by said retainer member and another orientation in which it may be removed through said opening and disengaged from said retainer member, said support member being guided in said movement by bearing surfaces formed integrally with the said retainer member and said support member, wherein said support member comprises two opposed flanges between which said wheel is mounted, at least one of said flanges having an upset portion extending towards the other of said flanges and defining one of said bearing surfaces which is a male bearing surface comprising two spaced, coaxial, part-circular surfaces separated by two substantially parallel chordal surfaces and wherein a passage leads to the upper bearing surface which is a female bearing surface of said corner piece said passage being wider than the space in between the chordal surfaces and less wide than the diameter of said circular surfaces whereby in said one orientation said upset may pass through said passage and in said orientation is prevented from passing through said passage.

4,353,187
DOOR REPAIR METHOD AND REPAIR SECTION THEREFOR
Oliver J. Jenkins, Jr., and Charles W. Mayfield, both of Youngstown, Ohio, assignors to The Youngstown Steel Door Company, Cleveland, Ohio
Filed Nov. 12, 1980, Ser. No. 206,024
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 **11 Claims**

8. A generally rectangular lower repair section for a metal rail car door comprising: a generally U-shaped frame including upright side frame members and a bottom frame member, said side frame members having upper ends and said frame being covered by a corrugated metal panel, said side frame members having panel mounting flanges including inner surfaces with said panel being secured to said flanges against said inner surfaces and wherein said panel has an upper edge extending across said side frame members adjacent said upper ends thereof, and said panel further having an upper flat portion adjacent said upper edge thereof with said upper flat portion

having an outer surface lying substantially in a common plane with said flange inner surfaces.

4,353,188
FOOD STORAGE BUILDING
Marvin E. Seago, 1133 NW. Richmond Beach Rd., Seattle, Wash. 98177
Filed Feb. 25, 1977, Ser. No. 772,000
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—93 **34 Claims**



1. A wall for a building, said wall comprising:
a. a plurality of upright columns;
b. said columns being spaced apart;
c. a plurality of spaced apart spacers having a positioning means positioned on a first side of said columns;
d. a first wall structure positioned on said spacers;
e. insulation juxtapositioned to said columns;
f. said insulation being sheets of beadboard, a solid expanded plastic;
g. said beadboard being both thermal insulation and a barrier to the flow of moisture;
h. a mastic between adjacent pieces of beadboard to allow said adjacent pieces of beadboard to move relative to each other and to maintain a barrier to the flow of moisture;
i. a clip means connecting said insulation to said positioning means to position said insulation;
j. said first wall structure being in a shielding position to protect said insulation;
k. a second wall structure positioned on a second side of said columns; and,
l. said first wall structure and said second wall structure comprising metal.

4,353,189
EARTHQUAKE-PROOF FOUNDATION FOR COKE OVEN BATTERIES
Friedrich Thiersch, and Manfred Strobel, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany
Continuation of Ser. No. 933,803, Aug. 15, 1978, abandoned. This application May 23, 1980, Ser. No. 152,539
Int. Cl.³ C10B *5/00*
U.S. Cl. 52—167 **14 Claims**

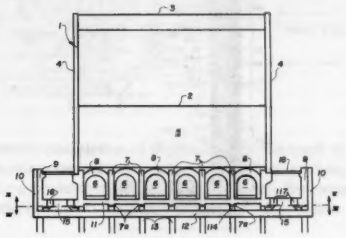
1. A coke oven battery with earthquake resistant foundation comprising:
a coke oven assembly (1) having a mounting plate (11);
a plurality of longitudinal ribs (7*a*) extending from a bottom of said mounting plate (11);
a base plate (12) fixedly connected to the ground;
a plurality of sliding elements (114) connected at spaced

locations between said base plate and said ribs for permitting transverse and lateral movement of said assembly on said base plate;

said mounting plate including a plurality of spaced openings (16) therein longitudinally distributed adjacent longitudinal sides of said mounting plate;

a ferroconcrete peg (15) extending upwardly from said base plate and into each of said openings; and

a plurality of elastic elements (117) connected between each of said pegs and sides of each of said openings to elastically restrain lateral and transverse movement of said mounting plate;



each of said elastic elements comprising an anchor plate connected to a side of said opening, a spring plate connected to said anchor plate, a plurality of buffer springs connected to said spring plate and extending toward said peg, a roller plate connected to said plurality of buffers springs, at least one roller rollable on said roller plate on a side of said roller plate opposite from said plurality of buffer springs, said roller rollable on an axis substantially perpendicular to the transverse and lateral movement of the coke oven assembly, an additional spring plate on which said at least one roller is rollable and an additional anchor plate connected to said peg and to said additional spring plate.

4,353,190

STIFFENED ELONGATE SUPPORT MEMBER

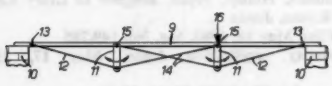
Maurice J. Gleeson, P.O. Box 663, Honeydew 2040, Transvaal, South Africa

Filed May 22, 1980, Ser. No. 152,304

Claims priority, application South Africa, Mar. 2, 1979, 79/0991

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—226 **9 Claims**



1. An elongate support member, wherein the support member has pivotally attached thereto at spaced points along its length at least two posts extending in the same general direction and generally transverse to the length of the support member, and wherein tension members or ties are pivotally attached to and extend between a point at or near each end of said member and the free end of the nearer post and from at or near the free end of a post to the pivotal connection of the next adjacent post to the member, whereby the tension members or ties cross each other between adjacent posts.

4,353,191

JOINING CORNERS AND INTERSECTIONS IN A LOG BUILDING CONSTRUCTION

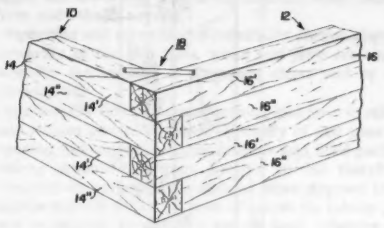
Laird W. Schilbe, R.R. #3,, Bayfield, Ontario, Canada (N0M 1G0)

Filed Feb. 19, 1980, Ser. No. 122,167

Claims priority, application Canada, Mar. 21, 1979, 323943

Int. Cl.³ E04B *1/10*

U.S. Cl. 52—233 **11 Claims**



1. A log-type building construction including a pair of walls which are angularly disposed relative to one another, each wall comprising a plurality of logs positioned one on top of the other, the walls being in interlocking relation to one another in a vertically disposed interlock region with the logs of one wall being in interleaved or interlaced relationship with the logs of the other wall along the interlock region, the logs or each wall having a mortise therein adjacent the interlock region, said mortises being disposed obliquely relative to the longitudinal axes of their respective logs, the mortises in the logs of said one wall being substantially parallel to the mortises in the logs of said other wall, locking means disposed in said mortises to secure the logs of said one wall to the logs of said other wall, said mortises comprising slots in said logs, each slot having flat generally parallel side walls, the slots in each wall being horizontally aligned with the slots in the other wall, said locking means comprising generally planar locking sections extending horizontally from within a said slot in one wall into a said slot in the other wall and fitting snugly in said slots to prevent the logs from moving horizontally relative to each other, said planar locking sections in association with the flat side walls in the mortises reducing any tendency of the building to go askew.

4,353,192

FIRE-RESISTANT METAL STUD

Robert J. Pearson, Tonawanda, and Rodney G. Buergin, Snyder, both of N.Y.

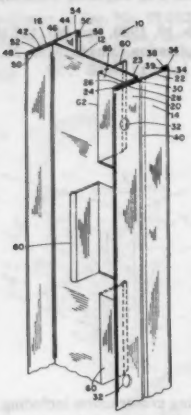
Filed Oct. 8, 1976, Ser. No. 730,994

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—281 **10 Claims**

1. A fire-resistant metal stud for supporting a vertical wall comprising an elongate formed sheet metal body having an elongate first side and, opposite thereto, an elongate second side, elongate means central thereof adjoining said first side and said second side, means on said second side for affixing wallboard thereto, a pair of flanges on said first side adapted to have the edges of a pair of wallboards affixed against the inner side thereof, whereby said flanges would be disposed on the surface of a wall formed by said wallboards, said pair of flanges including at least one flange which is formed from an inner layer sheet of metal extending from the inner edge of the flange to the outer edge of the flange whereat the metal is reversely folded and extends back to said inner edge forming an outer

layer, said inner layer and said outer layer being closely spaced apart and parallel, whereby air that becomes heated will tend



to move vertically upward within a gap between said inner layer and said outer layer.

4,353,193

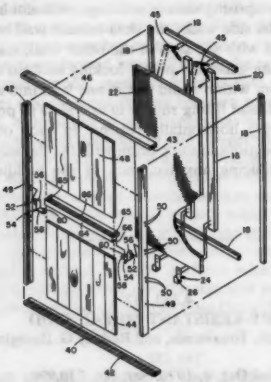
CHANGEABLE WALL PANEL STRUCTURE

Dewey S. C. Sanderson, 3901 E. 26th Ave., Denver, Colo. 80205

Continuation-in-part of Ser. No. 57,446, Jul. 13, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 175,019

Int. Cl.³ B44F *7/00*

U.S. Cl. 52—311 **7 Claims**



1. A changeable wall structure comprising a support, a frame secured to said support, an inner panel, a first mounting means connected to said support for removably holding said inner panel, at least one outer panel, and a second mounting means connected to said frame for removably holding said outer panel to conceal said inner panel, said inner and outer panels being removably held so that each panel substantially fills the space between the sides of the frame and, upon removal of an outer panel, the inner panel is exposed to view, said second mounting means comprising a brace secured to each side of the frame and a shelf supported at each end by the brace such that the shelf engages the sides of the frame, the shelf having a groove extending along its upper and lower surfaces for receiving the bottom and top edges, respectively, of said outer panels.

4,353,194

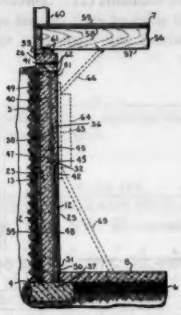
METHOD OF STRAIGHTENING AND REINFORCING STRUCTURAL MEMBERS

Willard S. Norton, 5608 NE. Oaktree La., Kansas City, Mo. 64118

Filed Sep. 19, 1980, Ser. No. 188,936

Int. Cl.³ E04G *23/02*; E04D *37/00*

U.S. Cl. 52—742 **13 Claims**



1. A method of reinforcing a structural member including an upper and lower block member, each of said block members having an inner wall in spaced relation to an outer wall with a passage being defined therebetween, said passages of said upper and said lower block members being substantially aligned and each of said first and said second block member inner walls having a face comprising a part of a surface of said structural member, said method comprising the steps of:

(a) removing a section of said inner wall of one of said block members whereby an opening is formed from said structural member surface to said one block member passage;

(b) placing a lower reinforcing member having an upper end through said opening and into said lower block member passage;

(c) placing an upper reinforcing member having a lower end through said opening and into said upper block member passage;

(d) connecting said upper end of said lower reinforcing member and said lower end of said upper reinforcing member; and

(e) securing said upper and said lower reinforcing members to said upper and said lower block members respectively.

4,353,195

COIN PACKAGING APPARATUS CAPABLE OF SEPARATELY DISCHARGING PROPER COIN PACKAGES AND STRAY COINS

Minoru Nakamura, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Japan

Filed May 14, 1980, Ser. No. 149,785

Claims priority, application Japan, May 17, 1979, 54/66646[U]

Int. Cl.³ B65B *57/14, 57/20*

U.S. Cl. 53—54 **6 Claims**

1. Apparatus for packaging a preselected number of coins in a stack comprising:

(a) means for stacking the preselected number of coins in a stack;

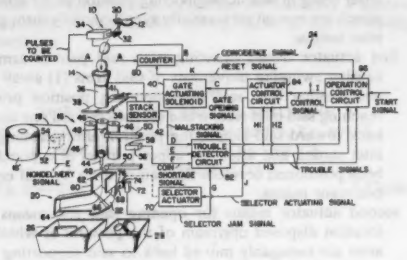
(b) means for packaging each stack of coins after stacking thereof by the stacking means;

(c) discharge means for receiving packaged coins, as well as stray coins, from the packaging means;

(d) selector means movable relative to the discharge means between a first working position in which the discharge means discharges to a first discharge position and a second

working position in which the discharge means discharges to a second discharge position;

(e) control means normally maintaining the selector means in the second working position and responsive to the successful completion of the packaging of a stack of coins for moving the selector means to the first working position for a predetermined length of time and then returning the selector means to the second working position.

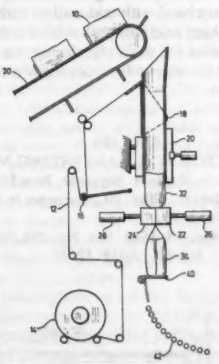


4,353,196

PACKAGE AND AUTOMATIC METHOD OF FORMING SAME

Frederick W. Beer, 270 Timberbank Blvd., Unit 55, Agincourt, Ontario, Canada (M1W 2M1); Robert A. Davis, 24 Eva Rd., Apt. 1605, Etobicoke, Ontario, Canada; Fedor P. Kresak, 31-12 Sentinel Rd., Downsview, Ontario, Canada, and Conio C. Kuev, 620 Lolita Gardens, Apt. 1909, Mississauga, Canada (L5A 3K7)

Continuation-in-part of Ser. No. 945,619, Sep. 25, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 144,986
Claims priority, application Canada, Sep. 12, 1978, 311143
Int. Cl.³ B65B *9/06*
U.S. Cl. 53—451 8 Claims



1. A method for automatically repeatedly packaging material in a flexible film package made from a continuous stock of film, said package having a substantially vertical heat seal joining the edges of the film into a tubular portion, a lower lateral heat seal, an upper lateral heat seal and the material being disposed in the so sealed package, comprising:

(1) advancing the film downwardly to form a tubular configuration thereof over a forming means;

(2) heat sealing opposite edges of the film along a substantially vertical seal line to form a sealed tubular portion thereof;

(3) closing sealing jaws transversely to engage thereinbetween the tubular portion disposed downwardly of the forming means;

(4) heat sealing opposite sides of the tubular portion by sealing means disposed with said jaws to form said lower lateral seal line in said tubular portion and said upper lateral seal line in a previous filled package located below said jaws and supported by a support member disposed downwardly from said jaws;

(5) laterally cutting the so sealed tubular portion between the upper and lower seal lines to separate said filled package from said tubular portion;

(6) depositing said material into the tubular portion disposed upwardly of the said jaws, while said jaws are closed, whereby the material is supported above and by said closed jaws;

(7) substantially simultaneously opening said jaws to release said tubular portion disposed upwardly of said jaws and opening said support member to allow said filled package resting upon the support member to fall therefrom, whereby the weight of the material alone disposed in the tubular portion above the jaws advances the tubular portion by gravity through said opened jaws, whereby step (1) is automatically repeated;

(8) closing said support member whereby the material and the tubular portion that passed through said open jaws comes to rest upon the closed support member and the advance of the tubular portion is stopped, and whereby the correct length of tubular portion for forming a package is automatically measured by the distance of the support member from the jaws; and

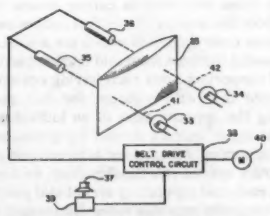
(9) repeating the steps for repeated packaging of the material, and wherein after step (3) the steps (4) through (6) may be in any order.

4,353,197

CONTENT ACTIVATED ENVELOPE EXTRACTION

Albert F. Stevens, Moorestown, and Paul E. Haley, Hammontown, both of N.J., assignors to Opex Corporation, Cherry Hill, N.J.

Continuation of Ser. No. 838,625, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 813,810, Jul. 8, 1977, Pat. No. 4,124,968. This application Mar. 3, 1980, Ser. No. 126,369
The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.
Int. Cl.³ B65B *43/30, 57/00*
U.S. Cl. 53—492 7 Claims



1. In the method of extracting contents from envelopes by a human operator's hand, utilizing a machine which transports the envelopes substantially unspread in succession to an extraction location at which each envelope is presented with one edge exposed to the operator's hand and spread open along the exposed edge to permit insertion of the hand and withdrawal accompanied by content extraction and from which the envelopes are substantially unspread, the improvement comprising:

sensing a change in said envelope contents form being inside to no longer being inside the spread open envelope at the extraction location as a result of said operator's hand withdrawal accompanied by content extraction, and

initiating the discontinuing of the spreading and the further

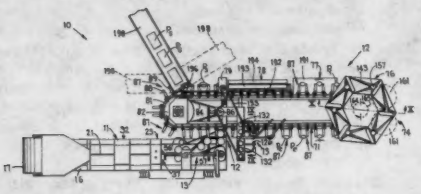
transporting away of each envelope in response to said sensing, both said sensing and said initiating being performed automatically and without any action by the operator.

4,353,198

POUCH FORMING AND FILLING APPARATUS

Robert G. Koppe, 4243 Dickman Rd., Apt. 3C, Battle Creek, Mich. 49015

Filed Dec. 21, 1979, Ser. No. 106,124
Int. Cl.³ B65B *43/30, 43/32, 7/06, 1/06*
U.S. Cl. 53—570 **15 Claims**



1. An apparatus for filling and sealing preformed flexible pouches, comprising:

endless carrier means defining a first endless and substantially horizontally oriented path;

means for supporting and unidirectionally driving said endless carrier means at a continuous uniform speed, and including a plurality of annular means supported for rotation about substantially vertical axes and individually disposed in engagement with said endless carrier means over a selected angular extent;

a plurality of pouch-supporting mechanisms mounted on said endless carrier means at uniform intervals therealong for individually suspendingly supporting individual preformed pouches;

said pouch-supporting mechanism including a rigid mounting member associated with said endless carrier means, and a pair of supporting arms individually pivotally supported on said mounting member for swinging movement about substantially vertical pivot axes, said pair of supporting arms being disposed in leading and trailing positions relative to the direction of travel of said endless carrier means, said arms projecting horizontally outwardly from said endless carrier means in a direction away from the interior of said first endless path so that said arms have outer free ends which are displaced sidewardly a substantial distance from said endless carrier means, said pair of supporting arms each having openable jaw means associated therewith adjacent the free end thereof for gripping the opposite sides of an individual pouch adjacent the upper corners thereof for permitting said pouch to be supportingly suspended between said pair of arms in sidewardly spaced relationship from said endless carrier means, each said supporting arm of said pair being individually swingably movable inwardly toward the other arm into a pouch supporting position, and each said arm being individually swingably movable outwardly away from the other arm into a nonsupporting position;

a pouch feeding device for continuously supplying individual preformed pouches one after another in spaced relationship to said endless carrier means at an inlet station which extends along a predetermined portion of said first endless path, said pouch feeding device including endless conveyor means driven continuously at the same uniform speed as said endless conveyor means for transferring individual pouches from a remote location to said inlet station, said endless conveyor means defining a pouch transfer path which at a discharge end thereof has a discharge portion thereof positioned closely adjacent and approximately parallel with said predetermined portion of said first endless path, said endless conveyor means supporting said pouch such that when it is disposed within said discharge portion of said transfer path the pouch is disposed with the upper portion thereof positioned directly between a pair of said supporting arms with the latter being in said nonsupporting position as the arms and pouch are moved substantially synchronously through the inlet station;

first actuator means coacting with said pair of arms for causing swinging movement of said arms (1) away from one another into said nonsupporting position prior to reaching said inlet station and (2) then toward one another back toward said supporting position after reaching said inlet station and after the upper portion of a pouch has been positioned between the pair of arms by said endless conveyor means;

second actuator means for opening said jaw means at a location disposed upstream of the position at which the arms are swingably moved back to said supporting position, said second actuator means also effecting closing of said jaw means at or downstream of the location wherein the arms are swingably moved inwardly into said supporting position for causing said jaw means to grip the upper portion of said pouch adjacent the opposite side edges thereof;

filling means associated with said endless carrier means at a filling station along said first endless path which is downstream of said inlet station, said filling means including at least one filling member supported for movement along a second endless path, at least a part of said second path being positioned substantially directly over that part of said first path as associated with said filling location;

means drivingly connected to said filling means for causing said filling member to be moved through said part of said second path at the same speed and in synchronization with the movement of said pouch supporting mechanism as it is moved through said part of said first path, whereby said filling member permits a selected product to be deposited into the pouch supported on the respective supporting mechanism as it moves through said filling station; and

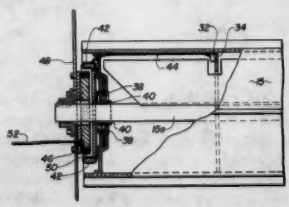
sealing means associated with said endless carrier means at a third station along said first path which is downstream of said filling station for sealingly closing the mouth of the filled pouch as it is suspended from the respective supporting mechanism.

4,353,199

STONE DETECTOR FOR HARVESTING MACHINES

Mark K. Chow, Leola; Shaun A. Seymour, New Holland, both of Pa., and Cal L. Bryant, Niles, Ill., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 15, 1981, Ser. No. 254,319
Int. Cl.³ A01F *12/16*
U.S. Cl. 56—10.2 **6 Claims**



1. A stone detector for use in harvesting machines of the type containing feed rolls operating to move crop material toward a cutting blade comprising:

acoustic sensing means attached within the core of a feed

roll for generating electronic signals in response to impacts of hard objects upon the surface of the roll;

means operably connected for transmitting said electronic signals from the acoustic sensing means; and

an electronic signal processing circuit means connected to the transmitting means operative in response to the signal from the acoustic sensing means for initiating a control sequence to protect the cutting blade of the harvesting machine.

4,353,200

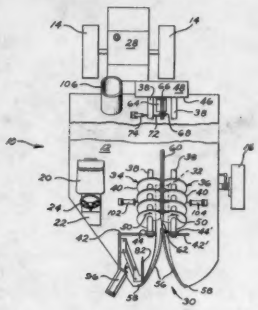
TOBACCO HARVESTING MACHINE

Harold W. Taylor, Jr., Rte. 3, Shepherdsville, Ky. 40165

Filed Sep. 10, 1981, Ser. No. 300,778

Int. Cl.³ A01D *45/16*

U.S. Cl. 56—27.5 **7 Claims**



1. In a tobacco harvesting machine for automatically impaling the stalks of standing tobacco plants onto a tobacco stick, said machine comprising in combination:

(a) a wheeled platform supporting a cooperating pair of generally parallel, rotating augers on which a tobacco stick is positioned in a generally horizontal, fixed position adjacent the top center of the augers;

(b) the front end of the said platform being provided with a wide, inwardly-tapered cutout channel that terminates as a narrow, elongated groove underlying the frontmost portion of the tobacco stick, said channel being adapted to be lined up with a standing row of tobacco plants;

(c) and a swinging pair of knife blades supported from the platform between a first inoperative position and a second operative position for piercing the stalk of a standing tobacco plant and forming a wide gap in the said talk in the vicinity of the front tip of the said horizontal tobacco stick so that the stick may be forced through the gap;

(d) and automatic control means for operating the position of the knife blades depending upon the relative position of the nearest tobacco plant;

(e) the said rotating augers serving to force the stalk of the tobacco plant rearwardly on the tobacco stick;

(f) and automatically-controlled cutting means for severing the stalk of the said tobacco plant from the ground after the plant is positioned upon the tobacco stick.

4,353,201

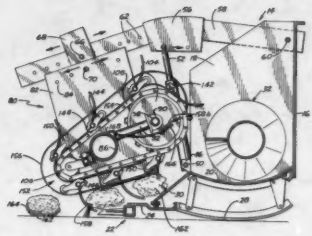
CROP HARVESTING APPARATUS

Michael J. Pierce; Kevin J. Pierce, both of 209 North Ridge Court, Grand Forks, N. Dak. 58201 and Wayne A. Pierce, Euclid, Minn. 56722

Int. Cl.³ A01D *43/02*

U.S. Cl. 56—364 **16 Claims**

1. Crop havesting apparatus comprising a vehicle, a cutter bar carried on the forward end of the vehicle, means supporting said cutter bar at an elevation closely adjacent the surface of the ground over which said cutter bar passes for severing a rooted or standing vine crop, such as pinto beans, close to the ground, means for engaging said vine crop including a plurality of longitudinally spaced rows of laterally spaced curved tines, means mounting said longitudinally spaced rows of tines forwardly of said vehicle so that the tips or free ends of said rows of tines successively engage said rooted or standing vine crop at an elevation also closely adjacent the surface of the ground and slightly in advance of said cutter bar to lift a portion of said vine crop above said cutter bar while still rooted or



standing sufficiently high for severance by said cutter bar of a lower portion of said vine crop at an elevation closely adjacent the surface of the ground as said vehicle moves fowardly, and means for moving said tines rearwardly towards said cutter bar and to cause said tips or lower ends of said tines to move rearwardly in a closely adjacent relation to said cutter bar so that said cutter bar severs said vine crop at an elevation generally beneath the beans on said vine crop, said spaced curved tines then transferring said severed crop rearwardly.

4,353,202

MANUAL APPARATUS FOR THREADING-IN TEXTILE APPARATUS

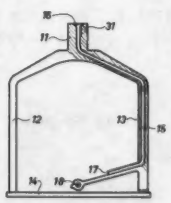
Peter Novak, Winterthur, and Hermann Gasser, Frauenfeld, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Sep. 8, 1980, Ser. No. 185,014

Claims priority, application Switzerland, Sep. 28, 1979, 8767/79

Int. Cl.³ D01H *17/00, 15/00*

U.S. Cl. 57—279 **5 Claims**



1. A manually-operated apparatus for threading-in a textile material into an enclosed duct of a textile processing machine, comprising:

means defining a chamber whose volume can be manually altered;

means defining an air inlet opening for said chamber;

means defining an air outlet opening for said chamber;

a respective valve for controlling each said air inlet opening and said air outlet opening of said chamber;

each of said air inlet opening and air outlet opening defining respective air passage locations;

a connecting element having opposed ends;

one end of said connecting element being connected with the air passage location intended to be operatively coupled with said duct; and

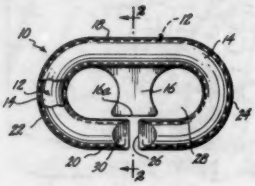
the other end of said connecting element being provided with a sealing element.

4,353,203

QUICK-COUPLING LINK

John G. D. Lotoski, Victoria, Canada, assignor to Sea Trec Enterprises, Ltd., Seattle, Wash.

Filed Feb. 20, 1981, Ser. No. 236,576
Int. Cl.³ F16G 15/04
U.S. Cl. 59—85 4 Claims



1. A quick-coupling link comprising:

a link having longitudinal side portions joined by curved end portions, one of said side portions having a slot in the central region thereof, said slot having a thickness less than the diameter of said link, said slot being positioned generally along a diameter of said link and extending from the inner portion of said link to the outer portion of said link, said slot being joined to the upper and lower surfaces of the link by outwardly diverging V-shaped notches that extend transversely from said slot, and

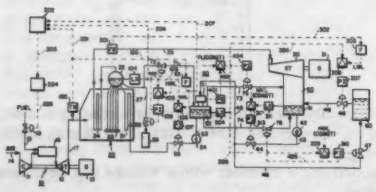
a flexible tab joined to the other of said longitudinal side portions and extending across the central portion of said link, said tab having a width greater than the width of said slot, said tab terminating adjacent said one longitudinal side portion and being separated from said one side portion by a distance less than a diameter of said link.

4,353,204

METHOD OF WATER LEVEL CONTPOL FOR A COMBINED CYCLE POWER PLANT AND CONTROL SYSTEM THEREFOR

Tadao Arakawa, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,479
Claims priority, application Japan, Feb. 21, 1979, 54-18303
Int. Cl.³ F02C 6/18
U.S. Cl. 60—39.02 39 Claims



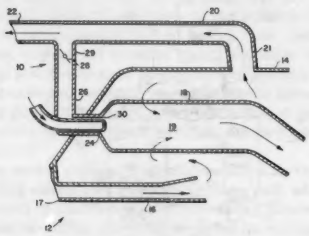
1. A method of water level control for a combined cycle power plant which includes gas and steam turbines and a steam generator for recovering heat in exhaust gases from the gas turbine and for using the recovered heat to produce and supply steam to the steam turbine, the steam generator including a drum for containing water, preventing excessive water level increase in the steam generator drum resulting from at least the swelling phenomena by controlling the water level in the steam generator drum during a start-up operation of the powder plant such that the water level in the drum is maintained below a predetermined excessive water level, and wherein the step of controlling the water level in the drum includes lowering the water level in the drum prior to the start-up operation and thereafter increasing the water level in the drum substantially in accordance with the increase of the gas turbine load.

4,353,205

PRIMARY ZONE AIR PROPORTIONER

Edward N. G. Cleary, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 16, 1980, Ser. No. 140,947
Int. Cl.³ F02C 3/22
U.S. Cl. 60—39.12 9 Claims



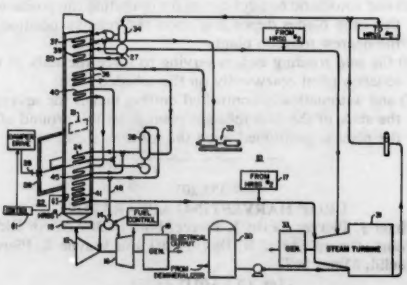
1. A gas turbine capable of burning either liquid hydrocarbon, oil gas or coal gas fuel, said turbine including a housing shell, a perforated combustion basket within the shell which defines a primary combustion zone, an air duct connected to the shell at such location as to allow said air duct to vent to a gasifier air heated by contact with said combustion basket in said shell, fuel injecting means for injecting gasified fuel into said turbine shell, and an air proportioner comprising means for venting air from said air duct for mixing with fuel from said gasifier so as to control the air-fuel mixture in the turbine.

4,353,206

APPARATUS FOR REMOVING NOX AND FOR PROVIDING BETTER PLANT EFFICIENCY IN COMBINED CYCLE PLANTS

Richard M. Lee, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 20, 1980, Ser. No. 179,867
Int. Cl.³ F02C 6/18
U.S. Cl. 60—39.18 B 2 Claims



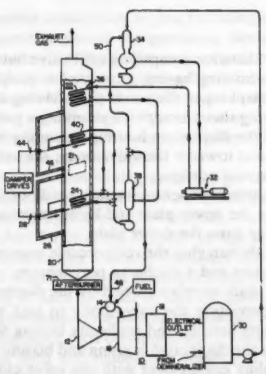
1. Apparatus for recovering heat energy and for removing NOx from the exhaust combustion gas in a combined cycle power plant having a turbine exhaust gas duct means, said apparatus comprising NOx removal means disposed in said

duct means for mixing a reductant with the exhaust gas and for generating a catalytic reaction which removes NOx from the exhaust gas within a predetermined gas temperature range, a waste heat recovery system including an economizer coil disposed in said duct means downstream from said NOx removal means and a feedwater supply system for said economizer coil, a steam drum supplied by said economizer coil, a modulating evaporator coil disposed upstream from said NOx removing means and receiving flow from said steam drum, respective evaporator coils disposed downstream and upstream from said NOx removing means and coupled in series to receive flow from said steam drum, said evaporator coils supplying steam to said steam drum, a superheat coil disposed upstream from said evaporator coils, means for sensing exhaust gas temperature upstream from said NOx removing means, a by-pass stack disposed across said modulating evaporator coil, movable damper means for diverting exhaust gas flow from said duct means through said by-pass stack, means for positioning said damper means in response to said gas temperature sensing means to hold the exhaust gas temperature within the desired NOx removal range, means for directing steam from said steam drum to the combustion turbine for combustor injection, and means for directing steam from said steam drum to said superheat coil to generate superheated steam for use in driving a steam turbine in the combined cycle plant.

4,353,207
APPARATUS FOR REMOVING NOX AND FOR PROVIDING BETTER PLANT EFFICIENCY IN SIMPLE CYCLE COMBUSTION TURBINE PLANTS

Richard M. Lee, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 20, 1980, Ser. No. 180,052
Int. Cl.³ F02C *6/18*
U.S. Cl. 60—39.18 B **7 Claims**

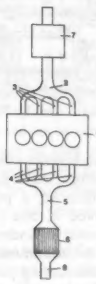


1. Apparatus for recovering heat energy and for removing NOx from the exhaust combustion gas in a single cycle combustion turbine power plant having an exhaust gas duct means, said apparatus comprising NOx removal means for mixing a reductant with the exhaust gas and for generating a catalytic reaction which removes NOx from the exhaust gas within a predetermined gas temperature range, a waste heat recovery system including an economizer coil disposed in said duct means downstream from said NOx removal means and a feedwater supply system for said economizer coil, a steam drum supplied by said economizer coil, a modulating evaporator coil disposed upstream from said NOx removing means and supplied by said steam drum, another evaporator coil disposed downstream from said NOx removing means and supplied by said steam drum, said evaporator coils supplying steam to said steam drum, means for sensing exhaust gas temperature upstream from said NOx removing means, a bypass stack disposed across said modulating evaporator coil, movable damper means for diverting exhaust gas flow from said duct means through said bypass duct, means for positioning said damper means in response to said gas temperature sensing means to hold the exhaust gas temperature within the desired NOx removal range, and means for receiving steam from said steam drum to make production use of the energy therein.

4,353,208
EXHAUST GAS PURIFICATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLES

Herbert Völker, Hanau, and Polat Öser, Wolfsburg, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 925,896, Jul. 19, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,393
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734010
Int. Cl.³ F01N *3/28*
U.S. Cl. 60—299 **1 Claim**



1. In an exhaust gas purification apparatus for an internal combustion engine including

a catalyst chamber containing a catalyst composition comprising noble metals of the platinum group for the catalytic conversion of harmful substances contained in the exhaust gases of the internal combustion engine deposited on a catalyst carrier therefor,

which chamber is connected to one end of an exhaust pipe, the other end of said exhaust pipe being connected to the internal combustion engine, said exhaust pipe having relatively thin walls,

wherein the catalyst carrier is susceptible to melting and damage at incompatibly high temperatures in said catalyst chamber caused by ignition and combustion of unburned hydrocarbon fuel resulting from improper or incomplete burning in the combustion engine of the fuel-air-mixture produced in the carburetor and the inability of said carrier to sufficiently rapidly conduct away the heat generated as a result of said ignition and combustion.

the improvement which prevents large quantities of non-ignited fuel-air mixtures from reaching the catalyst chamber containing said carrier,

and comprising at least a part of the inside wall of the exhaust pipe connecting the internal combustion engine with the catalyst chamber being coated with a noble metal of the platinum group containing layer

wherein the exterior and interior surfaces of said exhaust pipe do not have any other coating applied thereto,

whereby any fuel-air mixtures leaving the internal combustion engine in a non-ignited or unburned condition will be ignited and burned in said part of the exhaust pipe which is coated with said catalytically active coating,

and the substantial quantities of heat released by the combus-

tion in said exhaust pipe being radiated to a relatively large extent to the atmosphere through the relatively thin walls of the exhaust pipe,

so that the temperature in the catalyst chamber is not raised sufficiently high to fuse or melt the catalyst carrier,

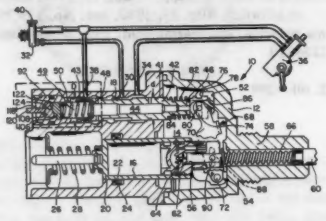
and whereby the catalyst carrier containing the catalyst composition is protected against overheating due to unwanted ignition and burning.

4,353,209

HYDRAULIC BRAKE BOOSTER

James B. Putt, Granger, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 18, 1980, Ser. No. 217,716
Int. Cl.³ B60T *13/00*
U.S. Cl. 60—547 B 1 Claim



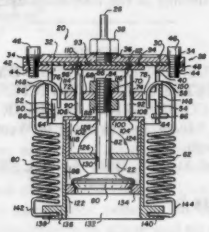
1. A hydraulic brake booster comprising a housing defining a pressure chamber therein and a pair of bores communicating with said pressure chamber, a pressure-responsive actuator piston movably received in one of said bores and operably cooperable with a master cylinder; said housing defining an inlet, an outlet and a vent communicating with the other of said pair of bores for communicating pressurized fluid through said housing; a control valve movably received in said other bore, said control valve in a first position communicating said inlet with said outlet and communicating said pressure chamber with said vent, first resilient means received in said other bore for yieldably biasing said control valve to said first position, said housing movably receiving an input assembly engageable with said actuator piston to move said actuator piston to operate said master cylinder, said input assembly moving toward engagement with said actuator piston in response to an operator input and including structure interconnecting said input assembly with said control valve, said interconnecting structure including second resilient means for opposing said first resilient means and urging said control valve to a second position in which said control valve closes communication between said inlet and outlet and between said pressure chamber and vent and communicates pressurized fluid from said inlet to said pressure chamber in response to movement of said inlet assembly toward engagement with said actuator piston, pressurized fluid in said pressure chamber moving said actuator piston to operate said master cylinder, characterized in that said brake booster includes an adjustable assembly received in said other bore and engaging said first resilient means for adjusting the bias applied by said first resilient means to said control valve, said adjustable assembly including a pair of relatively rotatable members and a plug with a bore receiving said members, one of said members being axially movable in said plug bore and engaging said first resilient member, the other of said members being restrained from axial movement in one direction by said plug, each of said members defining an oblique cam surface transecting said plug bore, said members rotatably engaging each other at said oblique cam surfaces whereby relative rotation of said members moves said one member axially in said plug bore, said one member moving said first resilient means to adjust the bias provided thereby, means for relatively rotating said members and means for retaining said other member in a selected relative rotational position, said means for relatively rotating said members including an elongate stem defined by said other member, said stem extending through said plug bore and terminating in an end external to said plug and housing, said end including means for grasping said stem so that said other member may be moved axially and rotatably relative to said plug via said stem, said means for retaining said members in a selected relative rotational position including a multitude of radially-extending lands and grooves defined on said other member and interlocking with a corresponding multitude of radially-extending lands and grooves defined on said plug, said other member being axially movable to disengage said lands and grooves so as to allow rotation of said other member relative to said plug comprising an interlocking fit defined between said one member and said plug.

4,353,210

TURBOCHARGER CONTROL VALVE

Richard H. Garrett, 2440 Nelson Ave., West Vancouver, British Columbia, Canada

Division of Ser. No. 86,238, Oct. 18, 1979, abandoned. This application May 18, 1981, Ser. No. 264,757
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—602 14 Claims



1. The combination comprising a lift valve having a stem and a diaphragm housing having a cover plate peripherally sealed against the diaphragm, the cover plate having a pressure port communicating therethrough for receiving a pressurized fluid, a portion of the diaphragm housing extending away from the cover plate and towards the valve body, the valve stem being connected to said portion;

a reciprocable member contacting a side of the diaphragm opposite the cover plate and being reciprocable towards and away from the cover plate;

a valve body carrying the reciprocable member and having a valve seat and a discharge port therein;

a valve closure member carried by the diaphragm housing;

springs connecting the valve body to said portion of the diaphragm housing and resiliently biasing the valve body towards the diaphragm housing and biasing the valve seat into sealing engagement with the valve closure member, the valve closure member being movable away from the valve seat, to permit a fluid to pass between the closure member and the valve seat and out the discharge port, when the pressure fluid from the pressure port against the diaphragm and the pressure of fluid against the closure member are sufficient to deflect the springs;

means for adjusting the tension of the springs comprising an annular member rotatably connected to the diaphragm housing, the annular member having a circumferentially extending sloping edge for each said spring, one end of each said spring engaging one said sloping surface, the annular member being rotated to adjust the tension; and

an internal combustion engine equipped with a turbocharger, the pressure port being connected to a conduit supplying air from the turbocharger to the intake manifold of the engine, the valve being connected to an exhaust conduit between the engine and the turbocharger so that some exhaust gases from the engine are vented through

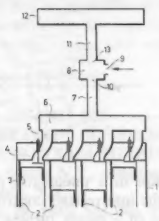
the discharge port of the valve when the air from the turbocharger increases to a predetermined level.

4,353,211

CONDUIT SYSTEM FOR INTRODUCING INTAKE GASES IN INTERNAL COMBUSTION ENGINES

Gyula Cser, Budapest, Hungary, and Fritz Spinnler, Liestal, Switzerland, assignors to Autoipari Kutato Intezet, Budapest, Hungary

Filed Dec. 17, 1979, Ser. No. 104,025
Claims priority, application Hungary, Dec. 21, 1978, AU 415
Int. Cl.³ F02B *27/00, 37/00*
U.S. Cl. 60—605 5 Claims



1. In an internal combustion engine including engine cylinders with respective pistons reciprocating therein; an intake gas conduit system for supplying each engine cylinder with intake gas through an intake opening thereof; maximum four engine cylinders whose suction cycles are in a substantially non-overlapping relationship with one another forming a cylinder group; the improvement wherein said intake gas conduit system comprises in combination

(a) a dampening vessel having an intake gas inlet opening;

(b) a first oscillating system in which intake gas oscillations are generated by the effect of periodic suction cycles of the cylinders forming the cylinder group; said first oscillating system having a natural frequency and consisting of

(1) a feed resonator vessel communicating with the intake opening of each cylinder of said cylinder group;

(2) a feed resonance tube having first and second ends; said feed resonance tube communicating, with said first end thereof, with said dampening vessel and further communicating, with said second end thereof, with said feed resonator vessel; and

(c) a second oscillating system in which intake gas oscillations are generated by the oscillations taking place in said first oscillating system; said second oscillating system having a natural frequency being at least approximately identical to the natural frequency of said first oscillating system; said second oscillating system consisting of

(1) a closed resonator vessel; and

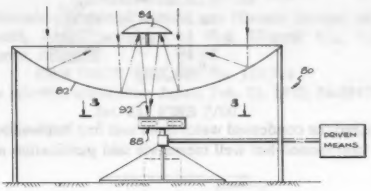
(2) an equalizing resonance tube having first and second ends; said equalizing resonance tube communicating, with said first end thereof, with said dampening vessel and further communicating, with said second end thereof, with said closed resonator vessel; said first end of said feed resonance tube and said first end of said equalizing resonance tube being spaced from, and being oriented towards, one another across said dampening vessel.

4,353,212

CLOSED FLUID LOOP SOLAR THERMODYNAMIC SYSTEM

Harold A. Adler, 1457 Eastwind Cir., Westlake Village, Calif. 91361

Continuation-in-part of Ser. No. 32,657, Apr. 23, 1979, Pat. No. 4,229,660. This application Sep. 15, 1980, Ser. No. 186,918
The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.
Int. Cl.³ F03G *7/02, 7/06*
U.S. Cl. 60—622 13 Claims



1. A closed thermodynamic system comprising:

a first vessel;

a second vessel;

a thermodynamic engine for converting energy in a thermodynamic fluid flow stream into mechanical energy, said thermodynamic engine having a piston for reciprocation within a cylinder, and valves to control flow to and from said vessels with respect to said cylinder to reciprocate said piston, said first vessel and said second vessel each being connected only to said thermodynamic engine, a thermodynamic fluid in said vessels and in said thermodynamic engine; and

means for first adding heat to said first vessel and removing heat from said second vessel so that the thermodynamic fluid in said first vessel is heated and raised in pressure for delivering thermodynamic fluid in gas phase under pressure through said thermodynamic engine to transfer thermodynamic fluid from said first vessel to said second vessel, and for secondly adding heat to said second vessel and removing heat from said first vessel so that fluid pressure is raised in said second vessel and lowered in said first vessel so that thermodynamic fluid in gas phase is delivered from said second vessel through said thermodynamic engine to said first vessel so that said thermodynamic engine provides output power.

4,353,213

SIDE STREAM TYPE CONDENSING SYSTEM AND METHOD OF OPERATING THE SAME

Toyohiko Masuda; Takeshi Ueno; Yoji Nagai; Hiroshi Tsunematsu, and Shozo Nakamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,072
Claims priority, application Japan, Aug. 21, 1979, 54-105513
Int. Cl.³ F01K *19/00*
U.S. Cl. 60—646 11 Claims

1. A side stream type condensing system comprising:

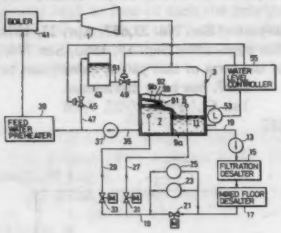
first hot well means for condensing exhaust steam from a turbine of a power plant into condensed water and for storing the condensed water therein,

second hot well means for storing the condensed water therein in order to prepare for water feed to a main system of the power plant,

weir means disposed in said second hot well means and forming water passage means for causing the condensed water to overflow from said second hot well means to said first hot well means,

purification means for purifying the condensed water from said first hot well means, and

pipe means for holding said purification means in communication with said first and second hot well means so as to



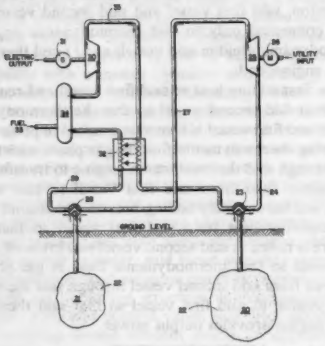
feed the condensed water from said first hot well means to said second hot well means via said purification means.

4,353,214

ENERGY STORAGE SYSTEM FOR ELECTRIC UTILITY PLANT

James H. Gardner, 1616 Arlington Dr., Salt Lake City, Utah 84103

Filed Nov. 24, 1978, Ser. No. 963,374
Int. Cl.³ F01K *25/00*; F02C *1/00*
U.S. Cl. 60—652 **22 Claims**



1. A method using a substantially closed fluid system for storing and retrieving excess energy produced during low energy demand periods by an electric utility, comprising the steps of:

a. storing a gaseous primary fluid at low pressure in a low pressure underground storage cavern,

b. compressing said primary fluid to high pressures utilizing energy output produced by said utility during low consumer demand periods,

c. storing said compressed primary fluid in a high pressure underground storage cavern,

d. transferring said compressed fluid during peak power demand from said high pressure storage cavern to a reaction zone,

e. reacting an exothermic fuel constituent within said compressed primary fluid to generate a heated working fluid comprised of said primary fluid and any fuel reactants and products present,

f. expanding said working fluid to produce an electrical output for supplementation of utility capacity, and

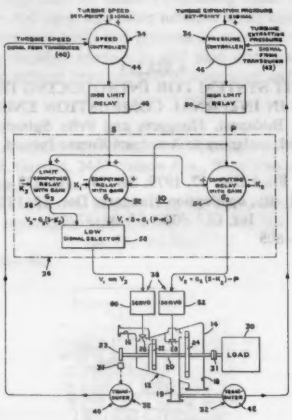
g. returning at least the resulting expanded primary fluid to said low pressure cavern.

4,353,215

FLUIDIC CONTROL SYSTEM FOR TURBINES

Lester M. Anderson, Wellsville, N.Y., and John D. Warnock, Richboro, Pa., assignors to Edison International, Inc., Rolling Meadows, Ill.

Filed Jul. 7, 1976, Ser. No. 703,173
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—660 **4 Claims**



1. The combination in a pneumatic pressure type fluidic control system for the interrelated control of first and second operating conditions of a steam turbine in accordance with predetermined desired values therefore of,

a. said steam turbine has, a steam inlet valve, a steam extraction conduit for the extraction of steam from an intermediate stage of said steam turbine, and a steam extraction valve in said steam extraction conduit to control the flow of steam extracted from said intermediate stage of the steam turbine,

b. said steam inlet valve to control the speed of the steam turbine as the first operating condition to be interrelated and controlled and said steam extraction valve to control the pressure of the steam extracted from said steam turbine as the second operating condition to be interrelated and controlled relative the steam utilized to maintain the desired speed of the steam turbine,

c. fluidic means responsive to signals of the actual values of said first and said second operating condition and to settings of the predetermined desired values of said conditions to provide first and second fluidic input signals representative of the differences, if any, therebetween,

d. fluidic computing means including,

1. first and second interconnected fluidic computing relays,

2. means operatively interrelated in said first and second computing relays to proportionately combine said first and second fluidic input signals to provide first and second fluidic control signals in accordance with the following equations:

$$V_1 = S + G_1(P - K_1)$$

$$V_2 = G_2(S - K_2) - P$$

wherein

V_1 is the first fluidic control signal which controls, the position of the steam inlet valve,

V_2 is the second fluidic control signal which controls the position of the steam extraction valve,

S is the first fluidic input signal which is substantially proportional to the load on the turbine,

P is the second fluidic input signal which is substantially proportional to steam flow in the steam extraction conduit,

G_1 is the fluidic gain of the first fluidic computing relay,

G_2 is the fluidic gain of the second fluidic computing relay, and

K_1 and K_2 are fluidic biasing signals which are respectively applied to said first and second fluidic computing relays,

e. a fluidic limit relay operatively connected to said means to modify said fluidic input signal S to provide a third fluidic control signal in accordance with the following equation

$$V_3 = G_3(S - K_3)$$

wherein

V_3 is the third fluidic input signal,

G_3 is the fluid gain of the fluidic limit computing relay, and

K_3 is a fluidic biasing signal which is applied to said fluidic limit computing relay, and

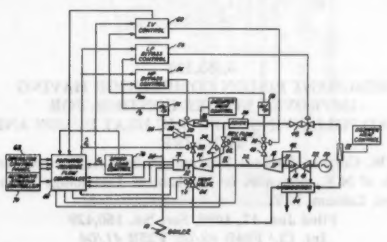
f. low signal selector means to receive said fluidic control signals V_1 and V_3 and operable to select the lower of said V_1 and V_3 signals and to transmit control signals for control of the position of said steam inlet valve to regulate the steam delivered to the steam inlet valve for said steam turbine.

4,353,216

FORWARD-REVERSE FLOW CONTROL SYSTEM FOR A BYPASS STEAM TURBINE

Royston J. Dickenson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,324
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—662 **16 Claims**



1. In combination with a steam turbine having a high pressure (HP) section, at least one lower pressure (LP) section, a steam conduit interconnecting the HP section of the LP section through a steam reheater, at least one admission control valve, at least one intercept valve, an HP bypass subsystem, an LP bypass subsystem, a reverse flow valve, and a ventilator valve, a control system for controlling said reverse flow valve, said ventilator valve, and said admission control valve to automatically select forward or reverse steam flow through said HP section, said control system comprising:

first automatic means for selecting the control signal according to which said admission control valve is positioned, said first means including first logic means to cause selection of a forward flow control signal whenever a first set of preselected operating conditions is satisfied and to cause selection of a reverse flow control signal forcing said admission control valve closed whenever said first set of preselected operating conditions is not satisfied;

second automatic means for controlling the operation of said reverse flow valve, said second means including second logic means to cause said valve to be opened only whenever a second set of preselected turbine operating condition is satisfied; and

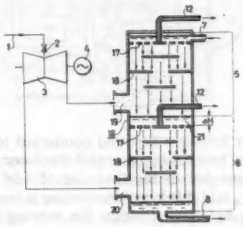
third automatic means for controlling the operation of said ventilator valve, said third means including third logic means to cause said valve to be opened only whenever a third set of preselected turbine operating conditions is satisfied.

4,353,217

DIRECT CONTACT TYPE MULTI-STAGE STEAM CONDENSER SYSTEM

Ryozo Nishioka; Yoshihiro Kizawa, and Hiroshi Shingai, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Feb. 5, 1980, Ser. No. 118,713
Claims priority, application Japan, Feb. 23, 1979, 54-19176
Int. Cl.³ F28B *7/00*
U.S. Cl. 60—693 **7 Claims**



1. A direct contact type multiple pressure stage steam condenser system comprising: a direct contact type high vacuum stage steam condenser and a direct contact type low vacuum stage steam condenser coupled to steam discharge outlets of a steam turbine and series-connected with each other, said high vacuum stage steam condenser being disposed above said low vacuum stage steam condenser; means for supplying cooling water into said upper high vacuum stage steam condenser, means for conducting away water discharged from said low vacuum stage steam condenser; and a water sprinkling board and a water supplying tank for said low vacuum stage steam condenser provided in an upper region thereof; said water supplying tank being formed as a water level on an upper surface of said water sprinkling board and being disposed between said high vacuum stage steam condenser and said low vacuum stage steam condenser such that a mixture of condensate formed in said high vacuum stage steam condenser and said cooling water drops into said water supplying tank and is supplied from said water supplying tank into said low vacuum stage steam condenser and that water is pooled in said water supplying tank and serves as sealing means to provide gas-tight separation between said high and low vacuum stage steam condensers.

4,353,218

HEAT PUMP/REFRIGERATOR USING LIQUID WORKING FLUID

John C. Wheatley; Douglas N. Paulson, both of Del Mar; Paul C. Allen, Solana Beach, all of Calif.; William R. Knight, Corvallis, Oreg., and Paul A. Warkentin, San Diego, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

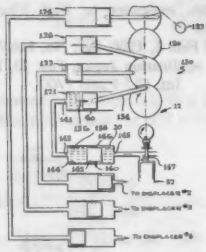
Filed May 28, 1980, Ser. No. 154,173
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **22 Claims**

8. A heat pump or refrigerator apparatus comprising:

first and second heat exchangers, each having a pair of working fluid-carrying passages interconnected at a first

end of the exchanger and unconnected at the other end of the exchanger to form a pair of ports;

a regenerator forming primarily parallel first and second passages which are physically separated but closely thermally coupled at numerous locations along the passages, said regenerator having check valve means allowing flow only in one direction through the other passage, said passages each having first ends coupled respectively to the pair of ports of said first heat exchanger and said passages having second ends that are coupled respectively to the pair of ports of said second heat exchanger;



a displacer having a first end connected to the first end of said first heat exchanger, said displacer having a second end connected to the first end of said second heat exchanger, said displacer also having a reservoir at each of its ends and having means for moving fluid at constant volume out of the reservoir at one end while receiving fluid at the reservoir at the other end;

a quantity of working fluid lying in said heat exchangers, regenerator and displacer, said fluid being a liquid; and

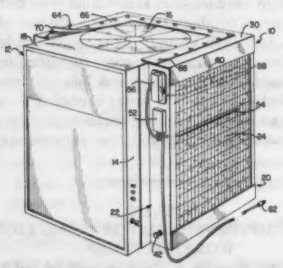
compressor means for alternately compressing and expanding said liquid working fluid.

4,353,219

SELF-CONTAINED AMBIENT PRECOOLER ATTACHMENT FOR AIR-COOLED CONDENSING UNITS

Robert L. Patrick, Jr., 508 Concord Ave., Belton, Mo. 64012

Filed May 19, 1980, Ser. No. 140,167
Int. Cl.³ F25B *39/04;* F28D *5/00*
U.S. Cl. 62—183 **6 Claims**



1. A substantially self-contained precooler attachment for air-cooled condensing units having ambient air inlets comprising:

a jacket adapted to at least partially envelope the exterior of a selected unit in upstream airflow relationship to said inlets,

said jacket including an upright frame and porous media supported within said frame,

said media being capable of permitting the gravitation therethrough of cooling water and the transverse flow of ambient air so that the latter may be precooled by said media before entering said inlets;

a manifold adjacent the normally upper portion of said media adapted to discharge water into the latter for said gravitation therethrough;

means for supplying water to said manifold;

a control operably associated with said supply means for activating and deactivating the same;

sensing means adapted for detecting the existence and non-existence of ambient air movement by the associated condensing unit resulting from operation and non-operation of the condensing unit respectively,

said sensing means being operably associated with said control in a manner to cause activation of said supply means when the condensing unit is in operation and deactivation of the supply means when the condensing unit is in a state of non-operation; and

a reservoir adjacent the normally lower portion of said media for receiving and collecting water gravitating through the media, said supplying means including a pump for recirculating water from said reservoir to said manifold,

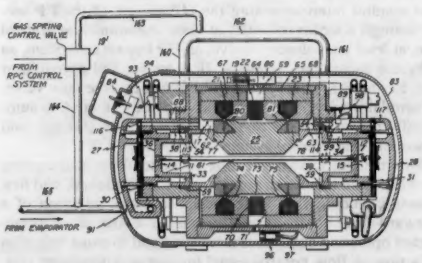
said supplying means further including means defining an inlet port for coupling the manifold with an external source of water under pressure, said control including a temperature-responsive valve operating to open said port when the temperature of collected water in said receptacle exceeds a certain predetermined level, said pump being provided with means for maintaining the same deactuated when said port is open as a result of the temperature of the water collected in said receptacle exceeding said predetermined level.

4,353,220

RESONANT PISTON COMPRESSOR HAVING IMPROVED STROKE CONTROL FOR LOAD-FOLLOWING ELECTRIC HEAT PUMPS AND THE LIKE

Peter W. Curwen, Ballston Spa, and Richard A. Dorman, Troy, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jun. 17, 1980, Ser. No. 160,429
Int. Cl.³ F04B *49/06;* F25B *41/04*
U.S. Cl. 62—228 **31 Claims**



1. In a resonant piston apparatus wherein a movable mass is arranged with gas spring means and an oscillating driving

means to form a dynamic ocillating system, the combination with such apparatus comprising:

dynamically variable gas spring control valve means communicating with said gas spring means for regulating the pressure of the gas in said gas spring means, and control means for dynamically variably controlling the opening and closing of said gas spring control valve means during operation of the oscillating system to thereby maintain the operation of said oscillating system within predetermined stroke limits and to dynamically variably modulate the stroke of the oscillating system to meet load demands.

4,353,221

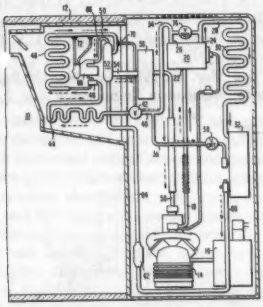
TRANSPORT REFRIGERATION SYSTEM

David H. Taylor, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 21, 1981, Ser. No. 226,952

Int. Cl.³ B60H *3/04*

U.S. Cl. 62—239 **3 Claims**



1. In a transport refrigeration unit of the type adapted to selectively provide either cooling or heating, a refrigeration system including:

a three-way valve having an inlet, and first and second outlets;

a refrigerant compressor having a discharge line connected to supply said three-way valve;

a refrigerant condenser;

a refrigerant evaporator;

first refrigerant line means connecting the first outlet of said three-way valve to said condenser for operation of the system in a cooling mode when said three-way valve is in a first position;

hot gas refrigerant line means connecting the second outlet of said three-way valve for passage of hot gas to said evaporator in operation of the system in a heating or defrost mode when said three-way valve is in said second position;

a pressure regulating valve in said hot gas line means to control refrigerant amounts to limit evaporator pressure to a first predetermined value;

a relief valve connected between said first line means and said hot gas line means and operable, when said three-way valve is in said second position, to pass refrigerant to said first line and said condenser when the hot gas pressure exceeds a second predetermined value;

whereby the values of both evaporator pressure and discharge pressure are limited to prevent overloading in heating and defrost operations.

4,353,222

VACUUM APPARATUS

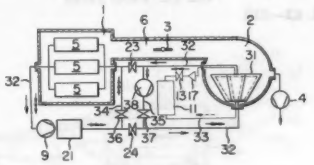
Masakazu Kobayashi, Tokyo, Japan, assignor to Kyowa Vacuum Engineering, Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,031

Claims priority, application Japan, Jul. 4, 1979, 54-85262; Feb. 23, 1980, 55-21871

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—268 **8 Claims**



1. A vacuum apparatus comprising a chamber and a vacuum pump connected to the chamber for lowering the pressure in the chamber, a condenser positioned in said chamber, the condenser including a casing defining a space and having a metal outer plate whose exterior surface acts as a condensing surface, a refrigerant flow pipe positioned within a portion of the casing space and adhering to the interior surface of the metal outer plate, and means to pass brine through a remaining portion of said space within the casing.

4,353,223

REFRIGERATOR WITH A LARGE REFRIGERATION CHAMBER COOLED BY NATURAL CONVECTION

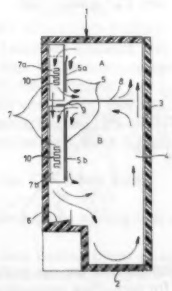
Wolfgang Dienemann, Giengen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,549

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928774

Int. Cl.³ F25D *13/02*

U.S. Cl. 62—442 **8 Claims**



1. Refrigerator having a large volume refrigeration chamber cooled by natural convection, comprising a defrostable finned evaporator disposed in upright position in the chamber, said evaporator being subdivided into at least two sections connected together in series in a refrigerant flow path, a view

shield serving as an air baffle disposed in front of each section of said evaporator, and a substantially horizontally disposed partition occupying substantially the entire usable cross sectional area of the chamber thus subdividing said chamber into two chambers, said partition having an edge extended between said sections of said evaporator so as to provide proper air flow between the divided chambers.

4,353,224

EVAPORATOR

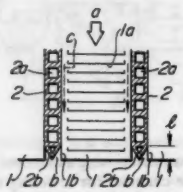
Masayuki Nonogaki, Kariya; Katsuya Ishii, Anjo, and Nobumasa Hirasawa, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 26, 1981, Ser. No. 247,930

Claims priority, application Japan, Oct. 16, 1980, 55/148117[U]

Int. Cl.³ F25B *39/02*

U.S. Cl. 62—515 **4 Claims**



1. A refrigerant evaporator in a refrigerating cycle of the type comprising a flat tube which is provided with a refrigerant passage or passages therein and formed to weave up and down to provide a plurality of upright portions to define horizontal passages of air to be cooled therebetween, and a plurality of corrugated fin units each of which is interposed between the adjacent upright portions of said flat tube in such a way that the fold lines or portions of said corrugated fin unit extend substantially horizontally and are in contact with the upright portions, wherein there is provided between said flat tube and each fold line or portion of said corrugated fin unit a non-contact space extending upstream over a length of about 3 to 10 mm from the downstream edge of said corrugated fin unit relative to the direction of air flow.

4,353,225

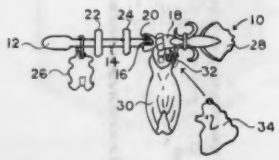
JEWELRY FOR ANIMALS

Wanda S. Rogers, 1210 Luttrell St., Knoxville, Tenn.

Filed Nov. 1, 1979, Ser. No. 90,463

Int. Cl.³ A44C *7/00*

U.S. Cl. 63—13 **10 Claims**



1. An ear decoration suitable for use with pierced ears of a domestic animal and for providing protection against irritation due to scratching and rubbing comprising:

a first member having a decorative portion;

an elongated shaft of a selected diameter having a first and further end, said first end permanently attached to said first member;

an extension member having a diameter substantially the same as said selected diameter and a receiving end and a projection end, said receiving end including a first elongated recess for receiving said further end of said elongated shaft;

a second member having a decorative portion and including a second elongated recess for receiving said projection end of said extension member; and

first and second protective means, each of said protective means defining an aperture having a diameter substantially the same size as said selected diameter, said first protective means for fitting snugly around said elongated shaft and between said decorative portion of said first member and said animal's ear, and said second protective means for fitting snugly around said extension member and between said animal's ear and said decorative portion of said second member such that when said elongated shaft and said extension member are passes through the pierced ear of said animal, said protective means provides protection against irritation of the animal's ear by scratching and rubbing.

4,353,226

ADJUSTABLE TORSION-SPRING SLIPPING CLUTCH

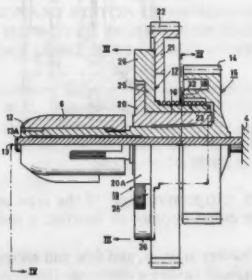
Henricus M. Ruyten, Vienna, Austria, and Johannes F. Hoefnagels, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,942

Claims priority, application Netherlands, Apr. 2, 1979, 792544

Int. Cl.³ F16D *7/02*

U.S. Cl. 464—40 **9 Claims**



1. An adjustable torsion-spring slipping clutch, comprising first and second coaxial clutch sections which are rotatable relative to each other about an axis of rotation, and a coaxially arranged cylindrical helical torsion spring which is connected at one end to the first clutch section, the second clutch section comprising a sleeve which is substantially circular in a cross-section perpendicular to the axis of rotation and around which turns of the spring are wrapped for transmitting torque between said clutch sections by the friction between the spring and sleeve, and means for adjusting the diameter of said turns to determine the torque to be transmitted between the clutch sections,

characterized in that the sleeve of the second clutch section has a substantially circular cylindrical shape and is adjustable in diameter.

4,353,227

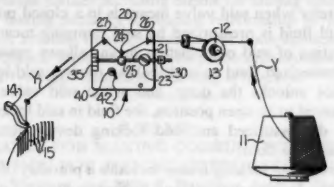
TENSION INDICATOR FOR ELASTOMERIC YARN

Harper Shields, Burlington, and Roscoe M. Farrell, Pittsboro, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 136,891, Apr. 30, 1980, abandoned. This application Nov. 10, 1980, Ser. No. 205,765

Int. Cl.³ D04B *15/46, 35/14*

U.S. Cl. 66—146 **7 Claims**



1. In a circular hosiery knitting machine particularly adapted for incorporating elastomeric yarn into knitted articles being formed thereby and including an elastomeric yarn supply source, a circle of needles, yarn feed finger means for feeding the elastomeric yarn from said supply source to said circle of needles, a manually adjustable tension device positioned between said supply source and said yarn feed finger means and adapted to engage and apply a predetermined amount of tension to the elastomeric yarn, a yarn tension indicator between said tension device and said feed finger means for continuously monitoring the tension of the elastomeric yarn and visually indicating to a machine operator the relative amount of tension in the yarn, and said tension indicator comprising a base plate, the combination therewith of a pointer lever pivotally supported on said base plate in a substantially horizontal position and being movable in first and second opposed directions above and below said horizontal position, movable yarn guide means supported on said pointer lever for longitudinal adjustment along substantially the full length of said pointer lever, fixed yarn guide means on said base plate for guiding the yarn in a substantially horizontal path of travel and passing through said movable yarn guide means on said pointer lever so that the tension in the running elastomeric yarn tends to move said pointer lever in said first direction, weight means supported for longitudinal adjustment along said pointer lever for urging said pointer lever in said second direction, and indicia means carried by said base plate adjacent said pointer lever for providing a constant visual indication to the machine operator of the relative amount of tension in the running elastomeric yarn.

4,353,228

CIRCULAR KNITTING MACHINE WITH LATCH DETECTOR

Harper Shields, Burlington, and Roscoe M. Farrell, Pittsboro, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 143,793, Apr. 25, 1980, Pat. No. 4,282,725. This application Nov. 28, 1980, Ser. No. 211,258

Int. Cl.³ D04B *35/10*

U.S. Cl. 66—157 **6 Claims**

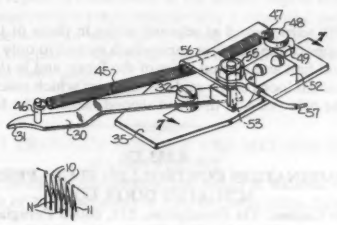
1. In a circular knitting machine including a circle of needles mounted for rotation about a fixed axis, each of said needles including an upper hooked end and a pivoted latch movable between open and closed positions, and yarn feed fingers for feeding yarn to said needles as said needles are raised and lowered to form stitch loops, the combination therewith of latch detector means for detecting a latch improperly positioned in a closed position, said latch detector means comprising

(a) a trigger lever including a free end,

(b) means supporting said trigger lever for pivotal movement int[illegible]iate its ends and about an axis parallel to said fix[illegible]xis of said circle of needles, said free end being normally positioned in an operative latch detecting position immediately below the path of travel of said upper hooked ends of said needles so that a latch in the proper open position does not engage said free end of said trigger lever and while a latch in an improper closed position will engage and move said free end of said trigger lever to an inoperative position wherein said free end is moved in the direction of movement and outwardly away from the path of travel of said needles,

(c) stop means mounted on said supporting means and adapted to engage one side of said trigger lever for normally maintaining said free end of said trigger lever in said detecting position,

(d) a tension spring fixed at one end adjacent said free end of said trigger lever and at the opposite end to said supporting means and so as to extend generally along and above



said trigger lever and the pivotal support thereof for urging said trigger lever into engagement with said stop means with said trigger lever in said detecting position, and for immediately moving said free end of said trigger lever to said inoperative position outwardly and away from the path of travel of said needles upon being laterally deflected from said detecting position by a latch in an improper closed position, and wherein said spring moves laterally during such lateral movement of said trigger lever, and

(e) primary sensor means including an electrically conductive member mounted on said supporting means adjacent said spring and operable by engagement with said tension spring upon lateral movement thereof for signaling when said free end of said trigger lever is engaged by a closed latch and moved outwardly and away from the path of travel of said needles.

4,353,229

WEFT KNITTED FABRIC

William Hutchinson, Leicester, England, and Klaus L. P. Wermelt, Greven, Fed. Rep. of Germany, assignors to Wildt Mellor Bromley Limited, Great Britain

Continuation-in-part of Ser. No. 856,208, Nov. 30, 1977, abandoned. This application Oct. 16, 1979, Ser. No. 85,420

Claims priority, application United Kingdom, Dec. 1, 1976, 50015/76

Int. Cl.³ D04B *9/06*

U.S. Cl. 66—197 **1 Claim**

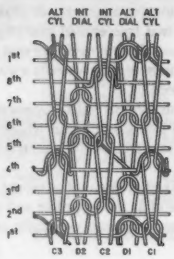
1. Weft double knitted fabric having first and second faces, comprising:

a first yarn drawn into knitted loops at selected wales, the loops of the same course of the said first yarn extending to both faces of the fabric;

a second yarn drawn into knitted loops at selected wales other than those selected for the first yarn, the loops of the same course of the said second yarn extending to both faces of the fabric;

a third yarn drawn into knitted loops at selected wales, the loops of the same course of the said third yarn extending to the first face only of the fabric;

a fourth yarn drawn into knitted loops at selected wales, the loops of the same course of the said fourth yarn extending to the second face only of the fabric; and



a fifth yarn tucked at selected wales in those of the knitted loops of the said first yarn which extend to only one of the said first and second faces of the fabric and in those of the knitted loops of the said second yarn which extend to only the other of said first and second faces of the fabric.

4,353,230

COMBINATION CONTROLLED FLUID PRESSURE ACTUATED DOOR LOCK

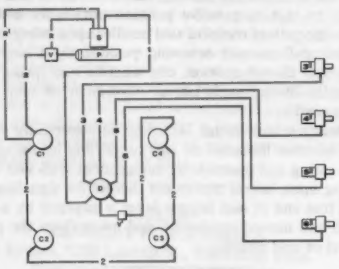
Renato Cacioni, Via Piccolpasso, 121, 06085 Perugia, Italy

Filed Jul. 23, 1979, Ser. No. 59,662

Claims priority, application Italy, Sep. 15, 1978, 43518 A/78; Jun. 22, 1979, 49505 A/79

Int. Cl.[3] **E05B** *37/12, 51/02, 63/14*

U.S. Cl. 70—275 **6 Claims**



6. A fluid-actuated lock for locking and unlocking a door, comprising:

a source of fluid;

changeable combination means permitting the selection of a unique predetermined setting for controlling and allowing the passage of fluid from said source of fluid upon the positioning of said combination means to said predetermined setting, and preventing the passage of said fluid when said positioning does not correspond to said predetermined setting;

at least one locking device which keeps the door normally locked, unlocks the door upon application of fluid under pressure, and automatically locks the door upon release of pressure from said fluid;

tube means connecting said source of fluid with said combination means and said combination means to said locking device;

pumping means interposed between said source of fluid and said tube means for pumping fluid under pressure through said tube means to said combination means and from said combination means to said locking device to unlock the door; and

a valved manifold means, connected between said source of fluid, said locking device and said combination means, for transferring fluid from said combination means to said locking device, said manifold means including valve means for controlling, including allowing and preventing, return of said fluid to said source of fluid;

said valved manifold means in conjunction with said combination means permitting the flow of said fluid to said locking device when the positioning of said combination means corresponds to said unique predetermined setting so as to actuate said locking device,

whereby when said valve means is in a closed position and said fluid is pressurized by said pumping means and the setting of said combination means allows passage of the pressurized fluid to said locking device, said locking device unlocks the door, and when said valve means is moved to an open position, the fluid in said locking device is depressurized and said locking device automatically locks the door;

wherein said locking means includes a plurality of said automatic locking devices, and further including a plurality of tube means connected to said plurality of locking devices and to said manifold means, and wherein said manifold means comprises:

a sleeve fixed in said door, said sleeve having a first hole connected to said source of fluid, a second hole connected to said tube means from said combination means, and a plurality of holes connected to said plurality of tube means to said plurality of locking devices;

a body slidingly mounted in said sleeve and having a groove means, said body having a first position wherein said groove is aligned with said first, second, and plurality of holes allowing free passage of fluid between them, and having a second position wherein said groove means is aligned with said second hole and said plurality of holes allowing free passage of fluid between them and wherein said first hole is blocked and fluid passage to said first hole is prevented,

whereby when said body is in the second position and said fluid is pressurized, the pressurized fluid unlocks the locking means and when said body is moved to the first position and the first hole is unblocked, the locking means are depressurized and the automatic locking device operates to lock said locking means.

4,353,231

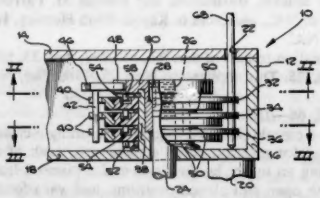
FRICTION DRIVE-SNAP INNER FIT TUMBLER WHEEL CONSTRUCTION

Tim M. Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.

Filed Sep. 11, 1980, Ser. No. 186,288

Int. Cl.[3] **E05B** *15/14, 37/00*

U.S. Cl. 70—316 **13 Claims**



1. A tumbler wheel adapted for use in combination lock to control a latch bolt lever comprising:

an outer gate ring having a periphery with a gate formed therein for receiving said latch bolt lever;

an inner drive ring;

means for mounting said gate ring in concentric relation with said drive ring, wherein said gate ring is axially rotatable relative said drive ring;

means for blocking axial rotation of said gate ring; and

friction means for preventing rotation of said drive ring relative said gate ring except upon application of rotation force in excess of a predetermined amount to said drive ring when said gate ring is blocked,

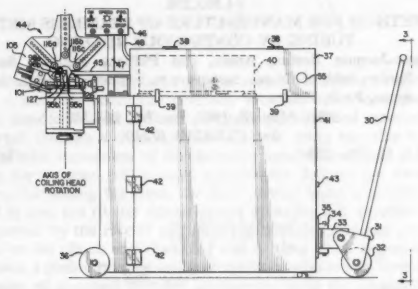
said friction means including an inner annular undulated mating surface rotatably fixed relative said drive ring and an outer annular concentric undulated mating surface fixed rotatably relative said gate ring for mating engagement with said inner undulated mating surface, said friction means further including means for biasing said undulated mating surfaces to mating relationship to prevent relative rotation therebetween except upon application of said rotation force in excess of a predetermined amount to said drive ring when said gate ring is blocked.

4,353,232

APPARATUS FOR MAKING CORRUGATED TUBING AND METHOD FOR JOINING CORRUGATED TUBING

Elmars H. Viesturs, and Billy J. Bauscher, both of Rockford, Ill., assignors to The Lockformer Company, Lisle, Ill.

Filed Jan. 28, 1980, Ser. No. 116,141
Int. Cl.³ B21C *37/12*; B21D *11/06*
U.S. Cl. 72—50 **16 Claims**



1. An improved apparatus for forming corrugated tubes of selectable diameter from ductile stip material including a frame, a means attached to said frame for making longitudinal corrugations in said strip material, a motor driving said corrugation making means, a means carried by said frame for forming the side edges of the strip material into inside and outside seam elements, a means carried by said frame for imparting a radius of curvature for the selected diameter of tubing to the strip material after corrugation, a means carried by the frame for imparting a helical angle to the strip material such that the inside seam element engages the outside seam element upon convolution of the strip, means for guiding the periphery of the strip during convolution, and a means for locking the engagement of the inside seam element with the outside seam element, said locking means deforming said engagement; the improvement comprising:

a means for simultaneously adjusting the means for imparting radius of curvature and the means for imparting helical angle so that the radius of curvature and helical angle required for the selected tubing diameter is produced.

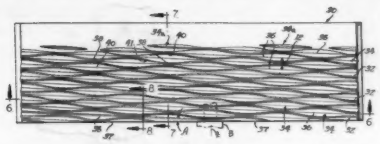
4,353,233

DIES FOR MAKING THREAD-FORMING FASTENERS

Eugene K. Chapman, South Dartmouth, Mass., assignor to Amca International Corporation, Hanover, N.H.

Filed Jan. 29, 1981, Ser. No. 229,450
Int. Cl.³ B21H *3/06*
U.S. Cl. 72—88 **5 Claims**

1. A roll-threading die for roll-threading a lobular screw from a blank of circular cross section comprising a die body having a plurality of longitudinal ridges defining a plurality of grooves, said grooves being of a generally V-shaped cross section and having base portions midway between the ridges, the base portions being parallel and inclined at an angle to the axis of a screw blank rolled between a pair of such dies so as to form a helix angle for the rolled thread, each said groove



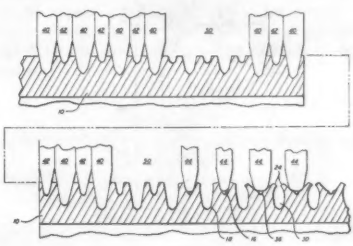
having repeating successive first and second regions along its length and with the groove varying in depth from a minimum at the first region to a maximum at the second region and such that said base portion traces substantially a sinusoidal path, the distance between an adjacent first and second region being equal to a fraction of the thread pitch multiplied by the cosecant of said helix angle.

4,353,234

HEAT TRANSFER SURFACE AND METHOD OF MANUFACTURE

Warren S. Brothers, Skaneateles, and Albert J. Kallfelz, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 815,116, Jul. 13, 1977, Pat. No. 4,159,739.
This application Dec. 14, 1978, Ser. No. 969,506
Int. Cl.³ B21D *53/06*; B21H *3/00*
U.S. Cl. 72—98 **24 Claims**



1. A method of forming a heat exchanger tube having integral ridges with fins angled in opposite directions to provide gapped cavities between the ridges comprising the steps of:

providing a tubular blank of substantially circular cross-section;

rolling the tubular blank to form alternating shallow grooves and deep grooves in the external surface thereof, the material between the deep grooves being a ridge having two fins as a part thereof; and

flaring the fins of each ridge in opposite directions so that each fin extends over the deep groove on its respective side of the ridge forming a narrow gap with the flared fin from the adjacent ridge thereby converting the deep groove into a gapped cavity.

4,353,235

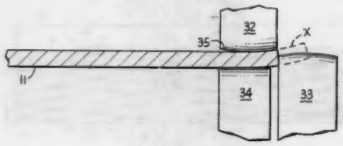
EDGE PREFORMING OF METAL PLATE

Calvin C. Williamson, Napa, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Filed Jun. 17, 1980, Ser. No. 160,390
Int. Cl.³ B21B *1/04*
U.S. Cl. 72—130 **9 Claims**

1. The process of preforming longitudinal edges of flat steel

plate into a finished pipe of a specified diameter comprising roll-forming said plate while said plate is of sufficient excess width to provide material to serve as a lever arm during rolling, said roll forming commencing at points spaced from said edges thereof, which points approximate bitter edges of the plate width required for pipe of said specified diameter and



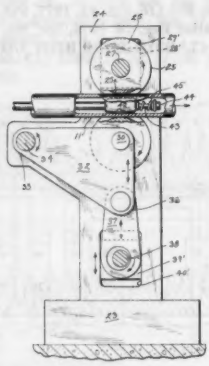
including the step of applying sufficient rolling force and crimping said edges of said plate adjacent said points in a direction toward the center of said pipe to a radius approximating that required for said finished pipe while leaving a central area of said plate between said points essentially flat, and shearing said plate at said points to form said bitter edges.

4,353,236

MACHINE FOR FLATTENING THE INTERNAL BEAD OF WELDED TUBING

Philip G. Byrd, 638 Rivermoor Dr., Waterford, Wis. 53185

Filed Dec. 3, 1980, Ser. No. 212,516
Int. Cl.³ B21C *37/30*
U.S. Cl. 72—193 **5 Claims**



1. An apparatus for removing by flattening the weld bead formed by the longitudinal seam welding of tubing includes:
(a) a mandrel positioned within the tubing;
(b) external hammer means positioned to forcibly strike the external surface of the tubing opposite the weld and to force the mandrel which is within the tubing against the weld to flatten it; and
(c) anvil means for shaping the external surface of the weld.

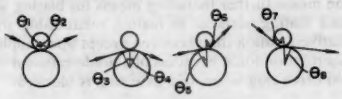
4,353,237

METHOD OF ROLLING STRIP

Shunji Omori, Aki; Tateo Tanimoto, Saiki; Nobutaka Maeda; Seiji Nishikawa, both of Hiroshima, and Muneo Moriya, Saiki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Apr. 3, 1980, Ser. No. 136,985
Claims priority, application Japan, Apr. 17, 1979, 54/47057
Int. Cl.³ B21D *1/05*
U.S. Cl. 72—205 **2 Claims**

1. A method of rolling a strip between two work rolls with small and large diameters respectively, for producing a relatively large amount of plastic deformation in the strip to substantially reduce the width of the strip, while tensioning and bending the strip, comprising: choosing the diameter ratio of said small and large work rolls to be in the range of 1/7 to 1/10; driving at least one of said work rolls or at least one roll in a group backing up said work rolls; rolling the strip as it is forced through said work rolls while bending the strip toward or away from either said small or large work roll at a strip entry-exit angle between 20° and 30°; and



applying a pressure onto the strip using said rolls to squeeze the strip;

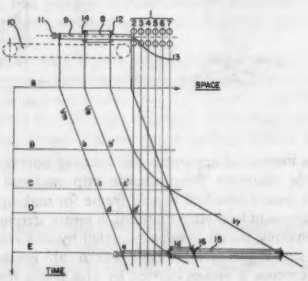
the pressure being sufficient to substantially plastically deform the strip by an amount which would require 25% to 50% more pressure if the entry-exit angle were zero and the small and large rolls were of equal diameter.

4,353,238

METHOD FOR MANUFACTURE OF SEAMLESS METAL TUBING BY CONTINUOUS ROLLING

Jean-Jacques Breton, Anzin, and Philippe Malicet, Saint-Saulve, both of France, assignors to Vallourec, Societe Anonyme, Paris, France

Filed May 18, 1981, Ser. No. 264,347
Int. Cl.³ B21B *17/10*
U.S. Cl. 72—209 **5 Claims**



1. In a method for continuous hot rolling of a tubular blank over an inside mandrel in a mill embodying a plurality of successive driven roll stands equipped with grooved roll pairs, said roll stands including an inlet roll stand at a front end of the mill, on outlet roll stand at a rear end of the mill, and at least one intermediate roll stand positioned between said inlet and said outlet roll stands, the respective roll stands providing successive passes with each pass decreasing the outer diameter of the blank and extending the length of the blank, positioning the tubular blank with its inside mandrel outside the mill adjacent said inlet roll stand, inserting the blank and mandrel into the mill in such a way that at the time that the tubular blank enters said inlet roll stand the mandrel forward end is located inside the mill between the inlet roll stand and the outlet roll stand, and driving said roll stands so that in said inlet roll stand the blank is rolled at a constant entry speed V_e, the improvement comprising controlling the mandrel movement during all times that the blank is engaged at any roll stand by moving the mandrel axially in the same direction as the blank at a constant speed, V_m, so that the mandrel is present and controlled at each roll stand, including said outlet roll stand, at the time that the blank leading end reaches each stand, and maintaining said

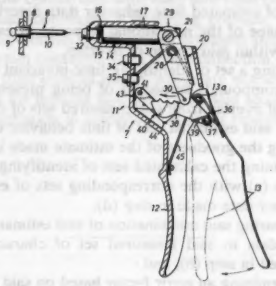
constant speed of the mandrel until the blank leaves said outlet roll stand, the speed of the mandrel being maintained so that ratio V_m/V_e is approximately between 0.75 and 1.30.

4,353,239

HAND RIVETER

Kaoru Fujimoto, Sakai, Japan, assignor to Nihon Nejimawashi Co., Ltd., Osaka, Japan

Filed Jun. 10, 1981, Ser. No. 272,255
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—391 **7 Claims**



1. A hand riveter the main body of which has a fixed handlebar, a movable handlebar pivotally movable relative to the fixed handlebar, and a chuck for gripping a headed mandrel inserted through a rivet sleeve, the chuck being movable by the pivotal movement of the movable handlebar to pull and snap the mandrel off its head and thereby deform the rivet sleeve for setting the rivet, the hand riveter being characterized in that the riveter comprises an operating bar pivotably supported by the riveter main body and having one end pivoted to the chuck and the other end serving as an engaging portion, a pusher pivoted to the movable handlebar and having a series of grooved portions engageable with the engaging portion, and a bearing member pivoted to the riveter main body and formed with bearing grooves positioned alongside the grooved portions in corresponding relation thereto and engageable with the engaging portion, whereby when the movable handlebar is repeatedly turned, the pusher pushes the engaging portion in engagement with one grooved portion after another to engage the engaging portion correspondingly in one bearing groove after another and move the chuck by the resulting movement of the operating bar for setting the rivet.

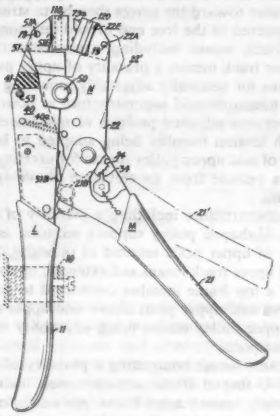
4,353,240

CRIMPING TOOL

Hans Undin, Akersberga, and Hans Wiener, Täby, both of Sweden, assignors to Toolema AB, Stockholm, Sweden; Hans Weiner

Filed Jan. 15, 1980, Ser. No. 112,192
Int. Cl.³ B21D *37/10*
U.S. Cl. 72—410 **13 Claims**

1. A crimping tool comprising a pair of arm members mounted for relative movement with respect to each other between an open configuration and a closed configuration, drive means responsive to an externally applied driving force for moving said arm members between said open configuration and said closed configuration as said drive means is moved between corresponding open and closed configurations by the driving force, said arm members and said drive means defining a force transmission path extending between a point at which the external force is applied and a corresponding one of said arm members, a pair of working jaws each mounted on one of said arm members, an elongated female die arranged on one of said working jaws and an elongated male die arranged on the other of said working jaws, said female die having a pair of opposed side walls forming an elongated notch wherein said side walls taper toward one another from the elongated end opening of said notch to an elongated closed end wall of said notch, said male die having a base part and an elongated leading face which is spaced from said base part by a distance substantially equal to the depth of said notch, said male die having a shape which can be fully contained within said notch of said female die, locking means for preventing said drive means from returning to its open configuration after closing



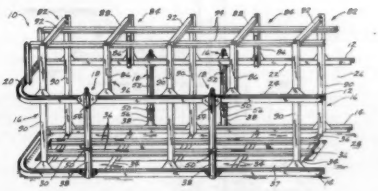
movement of said drive means is begun and before said drive means is moved to its closed configuration, and at least one resilient member of given hardness and strength located in said force transmission path for enabling said drive means to be moved to its closed configuration when an article to be crimped by said tool is located between said working jaws and so that said drive means can thereafter be returned to its open configuration.

4,353,241

APPARATUS FOR REPAIRING AND STRAIGHTENING VEHICLES

Carl R. Field, 2900 E. 38th, Des Moines, Iowa 50317

Filed Jan. 21, 1980, Ser. No. 113,793
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—457 **4 Claims**



1. Apparatus for repairing and straightening vehicles, comprising,

upper and lower track means, each track means including a pair of laterally spaced apart and longitudinally extended side members,

frame means connected to said upper and lower track means for supporting said upper track means in vertically spaced relation above said lower track means,

a plurality of tower assemblies,

means for supporting each tower assembly on said upper and lower tracks for longitudinal movement therealong,

each tower assembly including an upright tower, a lower

pulley means, means for vertically adjustably mounting said lower pulley means on said tower at selected positions between an uppermost adjusted position adjacent said upper track means and a lowermost adjusted position adjacent said lower track means, a flexible tension member having a free end adapted for securement to a vehicle positioned between said side members and an opposite end portion trained about said plurality means and connected to said tower, and power means for pulling said tension member toward the tower thereby to straighten a vehicle connected to the free end of said tensison member,

said frame means including a superstructure above said upper track means, a plurality of upper pulley means and means for vertically adjustably mounting said upper pulley means on said superstructure at positions above said uppermost adjusted position of said lower pulley means, each tension member being adapted to be trained about one of said upper pulley means for exerting a pulling force on a vehicle from an elevation above said upper track means,

said superstructure including a plurality of inverted generally U-shaped pulley support sections, each including a pair of upper posts secured to opposite side members of said upper track means and extended upwardly therefrom, and a top frame member connected to and extended between said upper posts above said upper track means,

said upper pulley means being adjustably mounted on said upper posts,

said frame means comprising a plurality of inverted generally U-shaped frame sections, each including a pair of laterally spaced apart frame posts secured to said upper and lower tracks and extended upwardly from said upper track and a top frame member connected between said frame posts above said upper track,

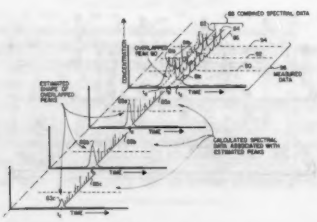
said upper posts of said superstructure being arranged in longitudinally spaced relation from said frame posts of said frame means whereby said frame posts are disposed in noninterfering relation with a tension member trained about one of said upper pulley means.

4,353,242

MULTICHANNEL DETECTION AND RESOLUTION OF CHROMATOGRAPHIC PEAKS

Joel M. Harris, and Fritz J. Knorr, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Dec. 16, 1980, Ser. No. 217,283
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **25 Claims**



1. A method for resolving overlapped migration data obtained while performing qualitative analysis of a substance whose composition is to be determined, said method comprising the steps of:

(a) subjecting said substance to be analysed to a first apparatus adapted to separate compounds contained in said substance as a function of their respective migration time in a given medium, said first apparatus further adapted to provide a set of migration data indicating the migration behavior of said compounds as a function of time;

(b) subjecting samples of said substance at specified times relative to the initiating of step (a) to a second apparatus, said second apparatus being adapted to measure and provide a unique set of characterizing time-invariant data for each of said samples, said set of characterizing data being a function of all the compounds contained in said sample at said specified times;

(c) identifying regions of peak overlap within said set of migration data, said regions of overlap indicating the presence within said sample of at least two compounds having approximately the same differential migration times;

(d) estimating a data set describing the differential migration time behavior of each of the compounds suspected of being present within each region of overlap identified in step (c), said set of estimated time behavior data describing the estimated shape of the migrational response of each said compounds within said region of overlap;

(e) calculating a set of identifying time-invariant data for each of said compounds suspected of being present within said regions of overlap from said measured sets of characterizing data and said estimated sets of time behavior data;

(f) varifying the goodness of the estimate made in step (d) by:

(i) combining the calculated sets of identifying data derived in step (e) with the corresponding sets of estimated time behavior data made in step (d),

(ii) comparing said combination of said estimated and calculated data to said measured set of characterizing data obtained in step (b), and

(iii) determining an error factor based on said comparison:

(g) modifying the estimated time behavior data made in step (d) as a function of the magnitude of the error factor determined in step (f);

(h) repeating steps (e), (f), and (g) as many times as is necessary in order to reduce the error factor calculated in step (f)(iii) to an acceptable level; and

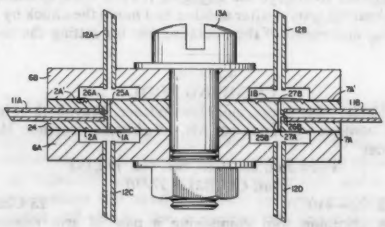
(i) identifying the compounds present within said region of overlap based upon the last set of calculated identifying data obtained in step (e) as a result of the repetition of step (h).

4,353,243

FLEXIBLE DIAPHRAGM CONTROLLED VALVE

Archer J. P. Martin, Lausanne, Switzerland, assignor to Quadrex Corporation, Woodbridge, Conn.

Filed Feb. 2, 1981, Ser. No. 230,817
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **7 Claims**



1. An improved fluid pressure controlled diaphragm actuated multiport valve comprising:

(a) a first plate having a multiplicity of control fluid inlet means passing through said first plate each of said control fluid inlet means being connectable to a source of control fluid under pressure, and under independent pressure control;

(b) a second plate assembled adjacent said first plate having a multiplicity of fluid conduct means passing through said second plate, each of said fluid conduit means opening opposite a corresponding control fluid inlet means in said first plate said second plate further having a multiplicity of operatively interconnected, low dead volume fluid chan-

nel means on its inner surface peripherally surrounding each of said fluid conduit means;

(c) a flexible diaphragm means disposed between said first plate and said second plate when said plates are assembled adjacent one another, said diaphragm means being so arranged and constructed as to seal any fluid conduit means to fluid flow when said corresponding control fluid inlet means is open to control fluid under pressure, wherein said channel means are in independent operative fluid flow connection with each said fluid conduit means when said diaphragm is not in sealing position with respect to said fluid conduit means and are not in operative fluid flow connection with each said fluid conduit means when said diaphragm is in sealing position, wherein further said channel means are so arranged and constructed to maintain operative fluid flow connection between any of said fluid conduit means which are not sealed; and

(d) means for holding said first plate, said second plate and said diaphragm in assembled adjacent relationship.

4,353,244

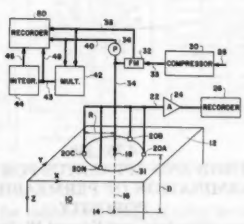
METHOD OF DETERMINING THE AZIMUTH AND LENGTH OF A DEEP VERTICAL FRACTURE IN THE EARTH

Milton D. Wood, Portola Valley, Calif., assignor to Fracture Technology, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 56,065, Jul. 9, 1979, Pat. No. 4,271,696. This application Jun. 30, 1980, Ser. No. 164,562

Int. Cl.³ G01N *19/02, 33/24*

U.S. Cl. 73—37 **22 Claims**



1. The method of determination of the azimuth of a deep substantially vertical hydraulic fracture in the earth resulting from the application of fluid pressure at a selected point, at a selected depth D below the surface of the earth, comprising the steps of:

(a) positioning on the earth, near the surface thereof, a plurality of tiltmeters for determining the change in angle of tilt of the earth at the positions of said tiltmeters, in an array of known positions with respect to said point of application of said fluid pressure:

(b) applying fluid pressure to the earth at said selected point, at a selected pressure P and flow rate F; while

(c) measuring a function of the change in tilt of the earth at said positions of said sensors; and

(d) from the measured changes in said functions of tilt at the positions of said sensors, determining the azimuth of said fracture resulting from said applied flow of fluid.

4,353,245

METHOD AND APPARATUS FOR INDICATING LOSSES OF STORED MATERIALS

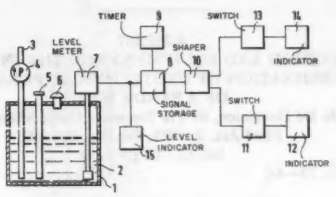
Walter Nicolai, Maria Louisen Strasse 144, D-2000 Hamburg 60, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 168,902

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928936; Oct. 5, 1979, 2940428; Mar. 13, 1980, 3009549; May 17, 1980, 3018949

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—49.2 **17 Claims**



1. A method for automatically indicating abnormal changes in the plurality of liquid stored in a liquid storage tank, including both abnormal increases and abnormal decreases in the quantity of liquid, said method comprising measuring at periodic, equidistant time intervals and the actual value of the change of level of the liquid within the tank since the last such measurement; comparing the measured actual value of change with a preset value representing the maximum value permitted for the change of level during such time interval; and when the measured actual value of change exceeds the preset value, activating an indicator.

4,353,246

BLOOD SEDIMENTATION DEVICE

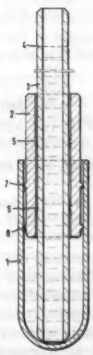
Horst Färber, Nümbrecht; Heinz Fritze, Gummersbach, and Eberhard Seibel, Waldbröl, all of Fed. Rep. of Germany, assignors to Walter Sarstedt Kunststoff-Spritzgusswerk, Nümbrecht, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 178,910

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935371

Int. Cl.³ G01N *15/04*

U.S. Cl. 73—61.4 **5 Claims**



1. A blood sedimentation device, comprising:

a transparent small-diameter sedimentation tube, provided with a calibration mark a short distance below the upper end thereof;

a tubular displacement sleeve disposed on said sedimentation

tube, said displacement sleeve being open at both ends so as to permit said sedimentation tube to pass through and extend from both ends thereof, wherein the inner diameter of said displacement sleeve is so dimensioned relative to the outer diameter of said sedimentation tube as to frictionally engage said sedimentation tube while allowing said sleeve to be axially displaceable against the entire length of said sedimentation tube; and

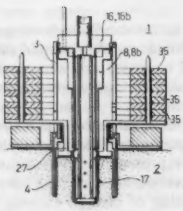
a tubular receptacle, closed at the bottom, having an inner diameter sized relative to the outer diameter of said displacement sleeve such that said displacement sleeve can be inserted in a piston-like manner into said tubular receptacle.

4,353,247

METHOD AND EQUIPMENT FOR THE IN SITU DETERMINATION OF GEOTECHNICAL PARAMETERS OF A SANDY SOIL

Rodolfo De Domenico, 40 Via Tommaso Gulli, Milan, Italy

Filed Jan. 2, 1981, Ser. No. 221,993
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—84 **3 Claims**



1. Method for the in situ determination of the load bearing characteristics of a sandy soil comprising the following phases:

circumscribing, in situ, in the sandy soil, a sand sample having a tubular, cylindrical shape, with a predetermined external diameter, a predetermined internal diameter, and predetermined length;

applying to said sample, in correspondence to its internal, cylindrical surface, a radial pressure of predetermined value;

applying to said sample, in correspondence to its upper annular surface, an axial pressure, the value of which is made to increase to a value at which the sample ruptures;

the load bearing characteristics being deduced from said value of axial pressure which causes the rupture, in combination with said values of the radial pressure and of the external and internal diameters of the sample.

4,353,248

WELL LOGGING TO DETERMINE THE NATURE AND EXTENT OF MUD FILTRATE PENETRATION

Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,793
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—152 **1 Claim**

1. A method for determining the depth of invasion of residual oil-displacing mud filtrate in an uncased portion of a borehole of a well to be evaluated for its secondary or tertiary residual oil recovery potential, comprising the steps of:

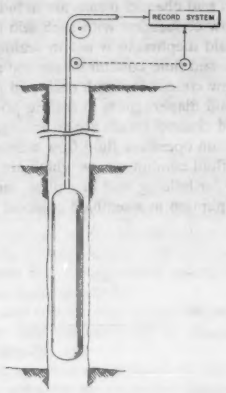
(a) logging said borehole with a formation density compensated logging tool for determining the porosity of the formation which is within several inches of the inner surface of said borehole;

(b) logging said borehole with a dielectric constant logging tool to determine the dielectric constant of the formation with a near zone located around said borehole;

(c) subjecting said borehole to an in-hole gravity meter test to determine the bulk density of the formation within a far zone adjacent to said borehole;

(d) using the porosity determination of step (a) above and the dielectric constant value determined from step (b) above to determine a theoretical percentage of residual oil present within said near zone;

(e) using the porosity determination from step (a) above and



the gravitometric bulk density of the far zone formation determined from step (c) above to calculate a theoretical percentage of residual oil for said far zone;

(f) establishing a near zone to far zone residual oil ratio to provide a relative mud filtrate invasion index which is proportional to the distance of said mud filtrate invasion, whereby the depth of said invasion decreases as said index approaches unity.

4,353,249

METHOD AND APPARATUS FOR IN SITU DETERMINATION OF PERMEABILITY AND POROSITY

Peter L. Lagus, Olivehain, and Edward W. Peterson, Del Mar, both of Calif., assignors to Systems, Science and Software, San Diego, Calif.

Filed Oct. 30, 1980, Ser. No. 202,076
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—155 **41 Claims**

1. In a method for in situ determination of permeability in a borehole extending through an underground formation of interest, the steps comprising

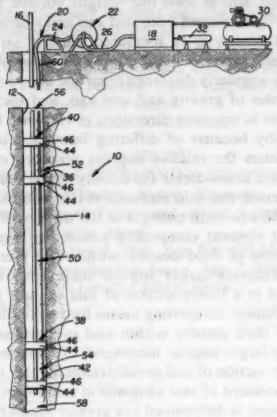
defining an isolated test interval along the borehole between spaced-apart primary packers,

defining additional isolated guard regions respectively at opposite ends of the test interval by means of guard packers respectively spaced-apart from the primary packers,

developing a pressure differential between the test interval and the surrounding formation for inducing fluid flow therebetween, and

simultaneously and separately monitoring selected flow conditions in the test interval and in the separate guard

regions in order to permit determination of multidimensional formation characteristics and possible leakage of



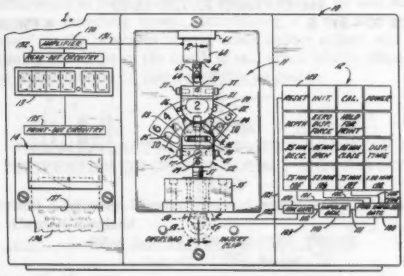
fluid past the primary packers in an axial direction relative to the borehole.

4,353,250

CALIBRATION DEVICE FOR MICROSURGICAL CLIPS

Alfred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.

Filed Jan. 8, 1981, Ser. No. 223,310
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—161 **9 Claims**



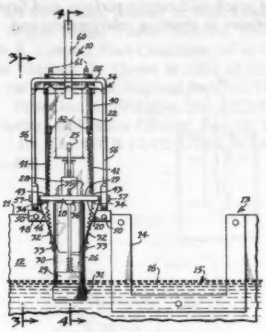
1. A machine for calibrating surgical clips having a pair of jaws of the duck bill type comprising, in combination, a frame, a first head and a second head in the frame, the heads being arranged in the frame in opposed relation for relative separating movement from a start position in which the heads are bottomed together, the presented adjacent ends of the heads having registering hooks oriented transversely and parallel to one another, the hooks having adjacent clearance openings for receiving respective ones of the jaws, an insertion stop behind the hooks for limiting the degree of insertion of the jaws into the hooks so that the hooks engage the jaws at a reference position about midway along the length of the latter, drive means interposed between at least one of the heads and the frame for separating the heads by a predetermined increment from one another thereby to spread the jaws of an inserted clip a predetermined reference amount approximating the spread of the jaws in engagement with a blood vessel and in any event well within the elastic limit of the clip, a force transducer interposed between at least one of the heads and the frame for producing an electrical signal which depends upon the reaction force of the clip at reference separation, and read-out means responsive to the electrical signal for providing direct indication of the clamping strength of the clip.

4,353,251

MOUNTING APPARATUS FOR LIQUID FLOW METER

A. Barry Spears, Nashville, Tenn., assignor to J. R. Wauford and Company, Consulting Engineers, Inc., Nashville, Tenn.

Filed Feb. 26, 1981, Ser. No. 238,473
Int. Cl.³ G01F *1/20*
U.S. Cl. 73—215 **10 Claims**



1. A mounting apparatus for a liquid flow meter for support upon a weir having a top edge, comprising:

(a) a base plate having a top surface and a bottom surface,

(b) a clock-driven recording drum rotatably supported on the top surface of said base plate,

(c) a stilling well mounted beneath and depending from the bottom surface of said base plate,

(d) a float shaft mounted for free vertical movement through said base plate in said stilling well and above said base plate,

(e) a float on said float shaft for vertical movement in said stilling well in response to the liquid level within said stilling well,

(f) a scribing tool mounted on said float shaft adapted to engage said recording drum for scribing thereon,

(g) a magnetic surface on the top edge of the weir, and

(h) a magnetic member fixed to the bottom surface of said base plate for magnetic engagement with said magnetic surface to hold said base plate stationary upon the top edge of the weir.

4,353,252

LIQUID LEVEL SENSOR

Edward L. Jeans, Ledbury, England, assignor to Cadbury Schweppes PLC, London, England

Filed Oct. 23, 1980, Ser. No. 200,021
Int. Cl.³ G01F *23/00*
U.S. Cl. 73—293 **12 Claims**

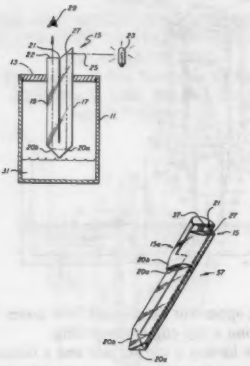
1. In combination with a gas cylinder capable of storing a liquefiable gas, the gas cylinder having a threaded recess disposed at the top of the cylinder, a sensor for sensing upper and lower levels in the gas cylinder comprising:

(a) a sensor assembly including a first level sensor and a second level sensor both of identical design but of different lengths, the lengths of said first and second level sensors being selected to represented an upper level and a lower level, each level sensor comprising:

(i) an input light pipe with an axis having an input surface at one end and terminating in an essentially 45° surface with respect to its axis at the other end;

(ii) an output light pipe with an axis adjacent said input light pipe having an essentially 45° surface with respect

to its axis opposite that of said input light pipe and having an output surface at its other end, an essentially non-refractive light path formed between said 45° surfaces, whereby, when said 45° surfaces of said light pipes are in a material of relatively low index, light at said input surface will be transmitted through said input light pipe, will be reflected at said 45° surfaces from said input light pipe to said output light pipe and will be transmitted to said output surface in said output light pipe, due to total internal reflection, but, when said 45° surfaces are in a material of higher index, light will be refracted at said 45° surfaces of said input light pipe and will not reach said output surface; said first and second level sensors in abutting relationship; and



(iii) a baffle disposed between said first and second level sensors;

(b) a seal disposed in said cylindrical recess;

(c) a transparent cylindrical cap member having an internal bore adapted to accept said sensor assembly with a press fit, having a flange at its bottom sized to fit in said cyindrical recess atop said seal; and

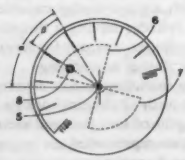
(d) a metal cover including an internal bore sized to tightly surround said transparent cap member and having external threads for screwing into said threaded recess, said metal cover having an input opening in the side thereof overlying the input surfaces of said first and second sensors and first and second output openings in the top thereof overlying the output surfaces of said first and second sensors.

4,353,253

DEVICE FOR MEASURING THE DENSITY OF FLUIDS

George E. Callahan, Feldstrasse 34, 4000 Dusseldorf 30, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 145,890
Int. Cl.³ G01N *9/16, 9/20*
U.S. Cl. 73—454 **11 Claims**



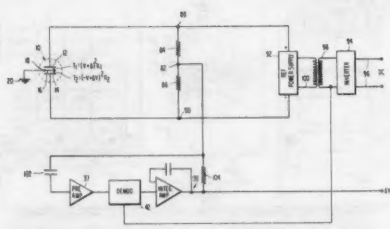
1. A device for measuring the density of a fluid having a density within a predetermined range, comprising a housing for containing the fluid, a first float element pivotal about a normally horizontal axis in said housing, a second float element pivotal about said axis, each of said elements including at least one buoyant volume that has a center of buoyancy displaced from said axis and a density which is less than the fluid density to be measured, and at least one weight volume that has its center of gravity displaced from said axis and a density greater than the fluid density to be measured, each of said elements being formed so that a radial line joining its center of buoyancy and said axis is angularly displaced from and above a radial line joining its center of gravity and said axis, and such that said elements rotate in opposite directions in response to buoyant forces, whereby because of differing buoyancy in fluids of different densities the relative angular positions of said elements about said axis indicate the density of the fluid in which they are immersed and said elements rotate in opposite directions about said axis with changes in the density of the fluids, said first float element comprising means for responding to equal increments of fluid density within said predetermined range with relatively larger angular increments of rotation about said axis in a lower section of said density range, said second float element comprising means for responding to equal increments of fluid density within said predetermined range with relatively larger angular increments of rotation about said axis in a higher section of said density range, so that the relative angular displacement of said elements in said lower section of said density range, is determined to a greater extent by said first element than by said second element and, in said higher section of said density range, to a greater extent by said second element than by said first element.

4,353,254

CONTROL CIRCUIT FOR ELECTRO-STATIC ACCELEROMETER

George F. Schroeder, Wayne, and Edward A. Demers, Little Falls, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Dec. 18, 1980, Ser. No. 217,599
Int. Cl.³ G01P *15/125, 15/13*
U.S. Cl. 73—517 B **6 Claims**



1. A control circuit for an electro-static capacitive accelerometer which includes two fixed plates and a movable intermediary plate, the circuits comprising:

a reference source of DC power;

a plurality of interconnected resistive means connected at their outer terminals across the output of the power source for generating DC voltages thereacross;

phase sensitive demodulator means having a first input connected to a reference AC voltage source and a second input connected in circuit with the accelerometer to detect capacitive imbalances thereof;

integrating means connected to the output of the demodulator means for generating a signal corresponding to the integral of the capacitive imbalance;

feedback means connecting the integral signal to a junction between the resistive means;

means connecting the fixed plates of the accelerometer to outer terminals of the resistive means;

terminal means connected to the output of the integrating means for permitting measurement of the integral signal;

wherein the reference AC voltage is derived from a terminal of a transformer, a secondary winding of the transformer being connected in circuit with fixed plates of the accelerometer, and further wherein means are connected between a center tap of the secondary winding and the second input of the phase sensitive demodulator; and

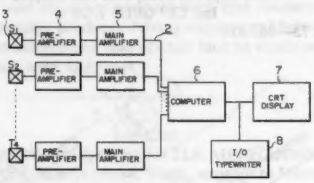
wherein a resistor is connected at a first terminal thereof to the output of the integrating means and at a second terminal thereof to both the resistive means junction and the second input of the demodulator means.

4,353,255

METHOD FOR DETERMINING SHAPE OF CRACK

Yoshio Fukuda, Hitachi; Kunio Enomoto, and Tsutomu Masumoto, both of Tokaimura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 222,141
Claims priority, application Japan, Jan. 7, 1980, 55/127
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—587 **6 Claims**



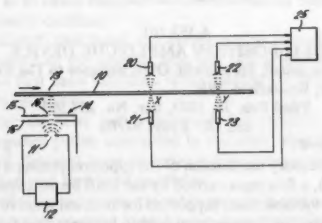
1. A method for detecting a shape of a crack comprising the steps of detecting acoustic emissions produced due to the crack developed in a test object by a plurality of acoustic emission detecting means mounted on said test object, determining positions of crack source points in said test object based on differences in time points of signals produced by said acoustic emission detecting means, determining a crack source plane based on the positions of said crack source points, and determining the shape of the crack in said crack source plane based on a distribution of said crack source points.

4,353,256

NON-CONTACT MEASUREMENT OF PHYSICAL PROPERTIES OF CONTINUOUSLY MOVING METAL STRIP

Ernest J. Moorey, Chester, England, assignor to The Electricity Council, England

Filed Jan. 19, 1981, Ser. No. 225,926
Int. Cl.³ G01K *11/24*
U.S. Cl. 73—597 **11 Claims**



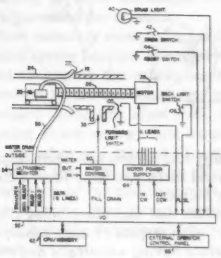
1. A method of determining a parameter representative of a physical property of continuously moving metal strip comprising the steps of generating an acoustical shock wave, containing ultrasonic frequencies, near one location on the surface of the strip and measuring the time of transmission of the shock wave through the strip between second and third locations to enable the velocity of propagation to be determined, wherein the time of arrival of the acoustic shock wave at each of said second and third locations in the material is determined by using, for each of said second and third locations, two microphones near but not in contact with opposite faces of the strip and determining the difference between the mean arrival times of the acoustic wave at the two microphones at the second and third locations.

4,353,257

NONDESTRUCTIVE SYSTEM FOR TESTING THE THICKNESS OF BOILER TUBES IN BOILERS

Jiri Vrba, Port Coquitlam; Alistair A. Fife, Coquitlam; Max B. Burbank, Maple Ridge; Vaclav Macura, North Vancouver, and Randy K. Lomnes, Port Coquitlam, all of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 6, 1981, Ser. No. 222,937
Claims priority, application Canada, Jan. 11, 1980, 343465
Int. Cl.³ G01B *17/02*; G01N *29/04*
U.S. Cl. 73—623 **16 Claims**



1. A system for the nondestructive testing of the thickness of boiler tubes, comprising:

(a) a probe assembly including mounting means for mounting the assembly in a mud or water drum of a boiler at the location of a boiler tube to be tested, said probe assembly comprising ultrasonic transducer means for transmitting and receiving an ultrasonic signal and motor drive means connected to said transducer means;

(b) a control means including a motor control portion connected to said motor drive means to selectively position said transducer means at a plurality of locations in said boiler tube to be tested and ultrasonic drive means for producing an ultrasonic pulse for driving said transducer means;

(c) water control means connected to said control means, a source of water supply, a drain, and said probe assembly, to selectively fill said boiler tube to be tested in a region of said boiler tube to be tested prior to testing and to drain said boiler tube to be tested after testing;

(d) electronic storage means connected to said transducer via said control means for storing data relating to wall thickness at each of said plurality of locations; and

(e) output means connected to said storage means via said control means for outputting said data.

4,353,258

COMPOUND ANGLE WEDGES FOR COUPLING ULTRASOUND INTO A CURVED SURFACE OBJECT

David O. Hunter, Richland, Wash., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 22, 1980, Ser. No. 189,499
Int. Cl.³ G01V *29/04*
U.S. Cl. 73—644 **10 Claims**

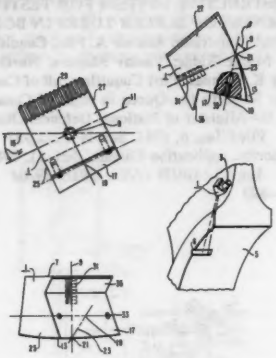
1. A wedge for a transducer utilized to ultrasonically interrogate an internal area within a mass disposed beneath a bell-shaped outer surface, said wedge having:

a cylindrical surface generally fitting a portion of said bell-shaped surface;

a generally planar surface upon which said transducer mounts;

said cylindrical surface and said planar surface generally forming two intersecting sides of said wedge;

a central axis of said wedge being disposed along a radial line extending to said cylindrical surface and intersecting said cylindrical surface at a central point disposed on said cylindrical surface;



a plane including said central axis being disposed to intersect said cylindrical surface so as to form a circular line at the intersection thereof;

said planar surface and said plane being disposed at a compound angle with respect to each other;

said planar surface having a centrally disposed point thereon and a line being disposed between said central point on said planar surface and said point where the central axis intersects the cylindrical surface; and

transducer mounting means so disposed on said planar surface that the central ray produced by said transducer is generally coincident with said line.

4,353,259

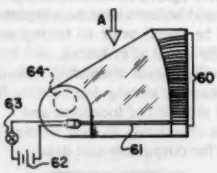
FIBER OPTIC ACCELERATION SENSOR

Clayton J. Schneider, Jr., East Aurora, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Oct. 15, 1980, Ser. No. 197,299

Int. Cl.³ G01P *3/36, 15/08*

U.S. Cl. 73—653 **8 Claims**



6. A direct visual reading accelerometer for indicating a plurality of magnitudes of acceleration in a predetermined vectorial direction of said accelerometer comprising,

a. a flexible fiber optic rod having a predetermined cantilever bending characteristic with a support end and a free end;

b. means for cantilever supporting said fiber optic rod in said accelerometer at said support end with the nominal position of said rod, when said accelerometer is at rest, being substantially perpendicular to said vectorial direction, whereby said free end of said rod deflects through a planr arc with a predetermined magnitude of arc responsive to a corresponding magnitude of acceleration in said vectorial direction;

c. means for illuminating said support end of said rod whereby light emanates said free end of said rod; and

d. a plurality of fiber optic rod elements having a first end and a second end, positioned in adjacent stacked relationship in a plane containing said deflection arc, with said first end of each of said rod elements positioned adjacent said deflection arc of said free end of said rod for receiving said light emanating said free end of said rod, and with the corresponding respective said second end of each rod element positioned to provide a direct visual indication of a magnitude of acceleration.

4,353,260

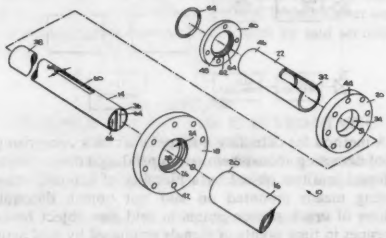
SHIELD FOR GAS SAMPLING PROBE

Robert T. Round, Riverton, Wyo., assignor to Texasgulf Inc., Stamford, Conn.

Filed Sep. 30, 1980, Ser. No. 192,352

Int. Cl.³ G01N *1/20*

U.S. Cl. 73—863.41 **21 Claims**



1. A shield for a probe adapted to sample gases comprising an elongated member adapted to receive and substantially enclose the probe, said elongated member having an end facing generally in the direction of elongation of the elongated member, means associated at least in part with the end of the elongated member disposed facing the exterior of the elongated member generally in the direction of elongation of the elongated member for permitting a gas to flow from the exterior of the elongated member to the interior of the elongated member and again to the exterior of the elongated member, the elongated member being adapted to be disposed in use so that gas enters the elongated member through said means transversely of the main gas flow exteriorly of the shield.

4,353,261

MULTI-POSITION AMPLITUDE DEVICE

Chittaranjan Salani, Springfield, Ohio, assignor to The Koehring Company, Brookfield, Wis.

Filed Feb. 24, 1981, Ser. No. 237,595

Int. Cl.³ F16H *33/00*

U.S. Cl. 74—87 **9 Claims**

1. In a vibratory mechanism of the type comprising a motor-driven shaft, a first mass carried by the shaft for rotation therewith, and a variable mass supported for rotation relative to said shaft whereby the angular relationship between said first mass and said variable mass can be selectively adjusted to vary the amplitude of vibration, the improvement comprising:

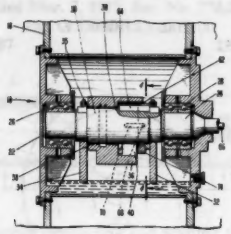
a drive member rotatable with said shaft,

one of said drive member and said variable mass carrying a plurality of longitudinally and circumferentially spaced abutment surfaces, the other of said drive member and said variable mass carrving a contact face,

engagement between said contact face and said abutment

surfaces occurring at different angular relationships between said first mass and said variable mass to vary the amplitude of vibration, and

control means producing relative longitudinal movement between said variable mass and said drive member to



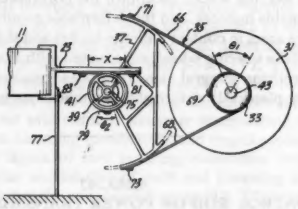
circumferentially align said contact face with a selected one of said abutment surfaces such that rotation of said drive member produces driving engagement between said selected surface and said contact face to rotate said variable mass with said shaft.

4,353,262

ROTARY/LINEAR SHUTTLE MECHANISM

Kevin J. Talbot, Mercer Island, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Filed Jun. 10, 1981, Ser. No. 272,320
Int. Cl.³ F16H *21/44;* B41J *25/28*
U.S. Cl. 74—108 **11 Claims**



1. A rotary/linear shuttle mechanism comprising:

a low inertia motor;

power means for supplying power to said low inertia motor so as to cause the shaft of said low inertia motor to rotationally oscillate;

a first stiff, thin band, the center region of said first band coupled to the shaft of said low inertia motor such that said first band oscillates when said motor shaft rotationally oscillates;

a large diameter pulley mounted for rotation, said large diameter pulley connected to the ends of said first band such that said large diameter pulley rotationally oscillates when said first band oscillates;

a small diameter pulley rotatably mounted, said small diameter pulley coupled to said large diameter pulley such that said small diameter pulley rotationally oscillates when said large diameter pulley rotationally oscillates; and

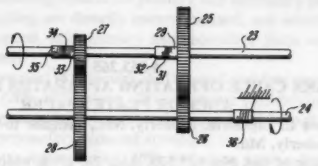
a second stiff, thin band, said second band being shorter than said first band, the center region of said second band coupled to said small diameter pulley and the ends of said second band connected to an item to be linearly shuttled such that said item to be shuttled linearly oscillates when said small diameter pulley rotationally oscillates.

4,353,263

POWER TRANSMISSION MECHANISM

John A. Ciciora, Denver, Colo., assignor to Nelson and Johnson, Boulder, Colo.

Filed Oct. 1, 1979, Ser. No. 80,741
Int. Cl.³ F16H *5/52, 1/02;* F16D *11/06*
U.S. Cl. 74—337 **7 Claims**



1. A spring clutch selective drive mechanism for selectively transmitting motion and torque from at least one input shaft to at least one mechanically linked output shaft through a plurality of spring clutches, the drive mechanism comprising:

a first input shaft journaled for rotation;

a plurality of arbors rotatably mounted upon the input shaft;

an individual clutch spring adapted to release in one direction of rotation and to grip in the other direction of rotation operably connected to each arbor at one end thereof and operably connected to the first input shaft at the other end thereof, the spring clutch spring being secured against slippage at one of the arbor and input shaft and wound around the other to slip in the grip direction of rotation upon a torque overload, each of the clutch springs being arranged to grip upon a common direction of rotation of the input shaft and to release during the opposite direction of rotation of the input shaft;

a rotatable output shaft spaced from the input shaft; and

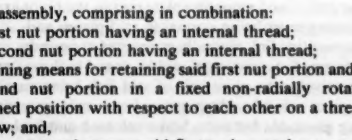
drive linkage means connecting each arbor to the output shaft, each drive linkage means having a different mechanical advantage than at least one other such that the output shaft will be driven through the arbor associated with the lowest mechanical advantage drive linkage means until such time as such spring clutch associated therewith slips in the grip mode, whereupon an arbor with the next highest mechanical advantage drive linkage means will be engaged through the associated spring clutch to drive the output shaft.

4,353,264

ANTI-BACKLASH NUT ASSEMBLY

Keith W. Erikson, 7 Quarry Circle Dr., Milford, N.H. 03055, and Kenneth W. Erikson, Peasley Rd., Merrimack, N.H. 03054

Filed Sep. 22, 1980, Ser. No. 189,333
Int. Cl.³ F16H *57/12;* F16B *39/36*
U.S. Cl. 74—441 **8 Claims**



1. An assembly, comprising in combination:

a. a first nut portion having an internal thread;

b. a second nut portion having an internal thread;

c. retaining means for retaining said first nut portion and said second nut portion in a fixed non-radially rotatable aligned position with respect to each other on a threaded screw; and,

d. spacer means between said first and second nut portions and rotatably mounted on said retaining means; and,

e. biasing means causing the spacer means to react to any

slack between opposing nut portions and axially rotate against at least one surface of one nut portion.

4,353,265

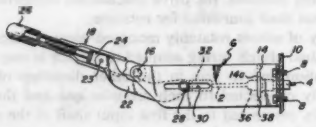
BRAKE CABLE OPERATING APPARATUS INCLUDING ANCHOR PLATE SPACER

Eugene C. Lipshield, Moberly, Mo., assignor to Orscheln Co., Moberly, Mo.

Division of Ser. No. 937,539, Aug. 28, 1978, which is a division of Ser. No. 806,963, Jun. 16, 1977, Pat. No. 4,127,042. This application Jul. 21, 1980, Ser. No. 170,729

Int. Cl.[3] F16C *1/12*

U.S. Cl. 74—501 R 4 Claims



1. In combination with a coaxial brake cable assembly including an inner cable member, and a tubular outer sheath member concentrically arranged about said inner cable member; brake cable operating means for axially displacing said inner cable member relative to said outer sheath member, comprising

(a) mounting plate means adapted for connection with a fixed support, said mounting plate means including a pair of spaced parallel mounting plates;

(b) anchor means rigidly connecting one end of said outer sheath member between said mounting plates, thereby to prevent axial displacement of said outer sheath member relative to said mounting plate means, said anchor means including a planar anchor plate connected between and extending normal to said mounting plates, saaid anchor plate containing a through opening in which one end of said outer sheath member is mounted, said inner cable member extending axially beyond said outer sheath member and through said anchor means into the space between said plate, said anchor plate means including at opposite ends projections that extend within corresponding aligned apertures contained in said mounting plates, respectively;

(c) guide means connecting one end of said inner cable member with said mounting plate means for linear axial displacement relative to said outer sheath member, said guide means including a transverse guide pin the opposite ends of which extend within aligned linear guide slots contained in said mounting plates, respectively, said one end of said inner cable member being connected with the center portion of said guide pin;

(d) an operating lever pivotally connected at one end with the other end of said mounting plate means, the pivot axis of said operating lever being normal to said plates; and

(e) a connecting link pivotally connected at opposite ends with an intermediate portion of said lever and with said guide pin, respectively, the pivot axis of said link being parallel with the pivot axis of said operating lever, said operating lever being pivotable between brake released and brake applied positions in which the free end of the inner cable member is displaced toward and away from the said one end of the outer sheath member, respectively.

4,353,266

MOTOR VEHICLE STEERING WHEEL COMPRISING A DEFORMABLE MEMBER

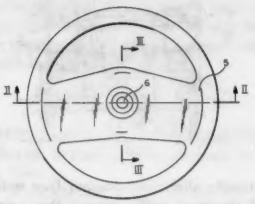
Klaus Grothe, Aschaffenburg, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,524

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1977, 2750235

Int. Cl.[3] G05G *1/10*

U.S. Cl. 74—552 4 Claims



1. In a motor vehicle steering wheel comprising a rim, a recessed steering wheel hub, means forming a bowl diverging upwardly and outwardly from said hub to said rim, spokes connecting said hub to the rim and a deformable member disposed within said bowl and within the confines defined by said rim of the steering wheel over said recessed steering wheel hub, which is connected by said spokes to the rim of the steering wheel, said spokes having upper surfaces and said deformable member occupying part of the bowl and lying on the upper surfaces of the spokes and on an end face of the hub of the steering wheel, the improvement wherein the rim, an outside periphery of the hub of the steering wheel and the spokes of the steering wheel, except for the portions contacted by the deformable member, and the deformable member except for its surface areas in contact with the spokes and the end face of the hub of the steering wheel, are covered with a coherent layer of polyurethane integral skin foam, said member constituting a unitary plastically deformable homogeneous body.

4,353,267

CONTROL ROD OR POWER TRANSMISSION ROD

Daniel Robert, Saint Vallier sur Rhone, France, assignor to Societe Anonyme de Recherches de Mecanique Appliquee, Saint Vallier sur Rhone, France

Filed Mar. 24, 1980, Ser. No. 133,397

Claims priority, application France, Mar. 26, 1979, 79 07980

Int. Cl.[3] G05G *1/00*

U.S. Cl. 74—579 R 5 Claims

1. An elongated tubular control rod having a bearing at each end, the rod being comprised by at least one continuous resin-coated filament that extends lengthwise along one side of the rod, about the bearing at one end of the rod, crosses over itself and extends along the other side of the rod, about the bearing at the other end of the rod, crosses over itself and extends again along one side of the rod, the regions in which the filament crosses over itself being disposed adjacent said bearings whereby a plane of weakness is avoided.

4,353,268

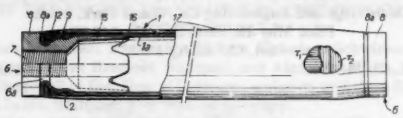
CONNECTING RODS

Claude Picard, Asnieres, and Daniel Daugny, Tournon, both of France, assignors to Avions Marcel Dassault-Breguet Aviation, Vaucresson and Societe Anonyme de Recherches de Mecanique Appliquee-Sarma, St. Vallier sur Rhone, both of, France

Filed Mar. 7, 1977, Ser. No. 775,050

Int. Cl.³ G05G *1/00, 3/00*

U.S. Cl. 74—587 **6 Claims**



1. A stiff integral connecting rod adapted to longitudinally and bi-directionally transmit tensile forces as well as compressive forces, said rod having a hollow tubular body (1) in the shape of a generally cylindrical main portion (1*a*) ending with two generally frusto-conical tapering extremities (2) and formed of a plurality of layers (T1, T2) of tapes (T) composed of high-strength parallel fibers (f) bonded together by synthetic resin, at least one (T1) of said layers having its fibers (f) extending longitudinally parallel to the generatrix of said tubular body and at least one other (T2) of said layers being wound helically around said tubular body (1), an end fastening member (6) of hardware fitted onto said tubular body (1) at each tapering extremity (2) thereof, each of said end fastening members (6) having at one end a skirt (9) which extends inside said tubular body (1) in engagement with the inner surface of the corresponding tapering extremity (2) thereof and an end extension (15) engaging an adjacent length of said main portion (1*a*), said extension (15) being axially notched (16) adjacent its free inner end so as to be resiliently yieldable in a radial direction, each of said end fastening members (6) having further a radially projecting collar (8) at its outer end opposite to said skirt with an intermediate section (6*a*) of reduced diameter between said collar (8) and said skirt (9), said layers (T1, T2) of the tubular body (1) being applied and bonded in situ over said tapering extremities (2) to tightly engage the exterior surface of said skirt (9) and said reduced diameter intermediate section (6*a*) of each end fastening member (6), and ringlike means (12) encircling the layers of said tapering extremities over said reduced diameter section (6*a*) of each end fastening member (6) to firmly anchor the ends of said layers (T1, T2) to said end members.

4,353,269

SHIP'S TRANSMISSION WITH CHANGEOVER FROM CRUISING SPEED TO SLOW SPEED

Heinz M. Hiersig, Dusseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,003

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2913375

Int. Cl.³ F16H *37/06, 47/04*

U.S. Cl. 74—682 **2 Claims**

1. In a ship's transmission with changeover from cruising speed to slow speed, having a driving shaft (1), a hollow intermediate shaft (6) and a driven shaft (9), and a kinematic connection between said driving and driven shafts, a changeover coupling in said kinematic connection, said coupling including a primary part (4) connected to the driving shaft and a secondary part (5) connected to said intermediate shaft, the improvement comprising:

a first planetary gearing (100), including a rotatable stay (11) connected to said secondary part (5);

a secondary planetary gearing (200) including a rotatable second stay (19) connected to said primary part (4), a controllable variable delivery hydrostatic pump (28) having fluid fittings (29, 30) and a drive shaft (27), a pinion (26) secured upon said drive shaft and connected to said second planetary gearing;

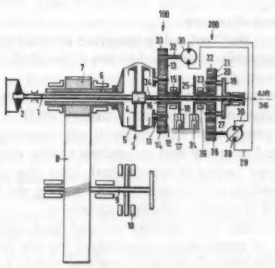
and a hydrostatic motor (31) having fluid fittings (29, 30) connected to said pump fittings, and a motor shaft (32) connected to said first planetary gearing; whereby at normal cruising speeds the primary and secondary parts of said coupling are directly interconnected; and whereby at slower speed, said primary and secondary parts are disconnected;

said primary part (4) through said second and first planetary gearing (200, 100), pump (28) and motor (31) driving said coupling secondary part (5) and connected driven shaft (9) at proportionately reduced speeds;

said first planetary gearing (100), including a sun wheel (16) registerable with a first brake (17), planet wheels (12) journalled upon said stay (11) and in mesh with said sun wheel;

and an internally toothed wheel (13) having outer toothing (14) and surrounding and in mesh with said planet wheels (12);

said second planetary gearing (200) including a second sun wheel (23) registerable with a second brake (24), second planet wheels (20) journalled upon said second stay (19), and in mesh with said secondary sun wheel (23), and a second internally toothed wheel (21) having outer toothing (22) surrounding and in mesh with said second planet wheels (20);



said pinion (26) being in mesh with the external toothing (22) of said second gear wheel (21);

said hydrostatic motor including a gear wheel (33) secured upon said motor shaft (32) and meshing with the external gearing (14) of said first wheel (13);

said kinematic connection including said intermediate shaft (6) journalled over and receiving said drive shaft (1) and connected to said secondary part (5) of said coupling (3);

a large gear wheel (8) secured upon said driven shaft (9), and an intermediate gear wheel (7) secured to said intermediate shaft and in mesh with said large gear wheel (8);

said driving shaft being connected to said coupling primary part (4);

said primary and secondary parts (4, 5) of said coupling being interconnected;

a tubular shaft (34) coaxial to said driving shaft (1) and extending into said coupling (3) and connected at one end to its primary part (4), said sun wheels (16, 23) including a pair of spaced aligned hollow tubes (15, 35) guidably receiving said tubular shaft (34), said tubular shaft being connected to and rotates said second stay (19) of said secondary planetary gearing (200);

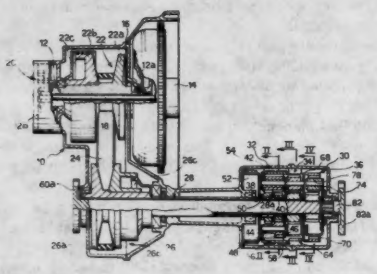
and a pair of spaced brake discs (18) between said first and second planetary gears (100, 200) mounted upon said tubes (15, 35) respectively extending into said first and second brakes (17, 24) respectively.

4,353,270

DRIVE TRANSMISSION UNIT INCORPORATING EXPANSIBLE-PULLEY STEPLESS SPEED CHANGER

Gianluigi Falzoni, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,383
Claims priority, application Italy, Apr. 11, 1979, 67764 A/79
Int. Cl.[3] F16H 37/00, 37/08
U.S. Cl. 74—689 7 Claims



1. In a motor vehicle, a drive transmission unit adapted to be operatively interposed between the vehicle's engine and the half shafts of the vehicle's driving wheels, said unit incorporating an expansible-pulley stepless speed changer and comprising:

a support structure,

a primary shaft rotatably mounted in said support structure and connectable at one end to the drive shaft from the engine of said vehicle,

a hollow secondary shaft rotatably mounted in said support structure parallel to said primary shaft,

two expansible pulleys respectively mounted fast for rotation on said primary and secondary shafts, each pulley comprising two facing frusto-conical discs one of which is rigidly connected to its respective mounting shaft and the other of which is axially slidable therealong,

a trapezoidal belt passing around said pulleys at respective radii of engagement dependent on the position of the said slidable disc of the corresponding pulley axially of its mounting shaft,

an hydraulic means operable to control the axial displacement of the said slidable disc of each pulley whereby to vary said radii of engagement and change the transmission ratio between said primary and secondary shafts,

a selectively-operable epicyclic reversing unit coaxial with said secondary shaft and driven from one end thereof, the said reversing unit providing a stage of reduction gearing for the transmission unit,

an epicyclic reduction gear box juxtaposed said reversing unit on one side thereof, the reduction gear box being coaxial with the reversing unit and being drivingly connected thereto,

an epicyclic differential unit juxtaposed said reduction gear box on the side thereof away from the reversing unit, the differential unit being coaxial with the reduction gear box and being drivingly connected thereto, said differential unit including first and second rotatable output members,

a first output shaft extending coaxially through said secondary shaft to project from both ends thereof, one projecting end of the first output shafts being connected to said first rotatable output member of the differential unit, and the other projecting end of the first output shaft being adaptable to drive one said half shaft of the vehicle,

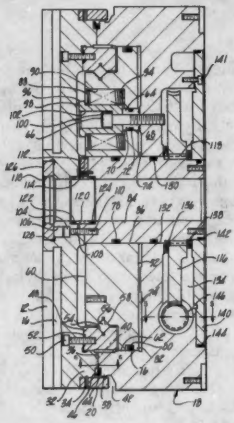
and a second output shaft rotatably supported by said support structure in coaxial alignment with said first output shaft, the second output shaft being connected to said second rotatable output member of the differential unit and being adaptable to drive the other said half shaft of the vehicle; said reversing unit being remotely selectively settable into one of three operating states in the first of which said output shafts are arranged to rotate in the same sense as said secondary shaft, in the second of which said output shafts are arranged to rotate in the opposite sense to said secondary shaft, and in the third of which said output shafts are drivingly disengaged from said secondary shaft.

4,353,271

MULTIPLE POSITION ROTARY INDEX TABLE

Daniel J. Pieczulewski, South Lyon, Mich., assignor to A.G. Davis Gage and Engineering Co., Hazel Park, Mich.

Filed May 15, 1980, Ser. No. 149,906
Int. Cl.[3] B23Q 17/02
U.S. Cl. 74—826 15 Claims



1. A rotary indexing table comprising:

a generally circular top plate;

a fixed base structure;

means mounting said top plate for rotation about an axis on said fixed base structure and limited axial movement relative said base;

indexing-locating means for positively locating said table top plate in any of a plurality of rotated positions about said axis of rotation;

means for selectively releasing said top plate from said indexing-locating means to enable rotation of said top plate to respective indexed positions rotated about said axis of rotation;

said indexing-locating means including a skirt portion formed on said top plate extending axially about the periphery of said top plate, said skirt portion being formed with a series of serrations extending radially along the axially most remote surface of said skirt portion; further including a corresponding rim portion formed on said fixed base structure and being formed with corresponding serrations to said top plate serrations extending radially outward and in opposition to said top plate serrations, said top plate and fixed base structure serrations being engagable with each other in each of said plurality of indexed positions upon axial movement of said top plate into engagement toward said base structure;

said indexing-locating means further including means applying a locking force acting between said top plate and said fixed base structure forcing said serrations into engagement thereof; and

said indexing-locating means also including a piston having an outside diameter slidably mounted in a bore formed in said fixed base structure, bearing means acting between said outside diameter of said piston and said top plate, said bearing means including an outer raceway carried by said top plate, said bearing means having means absorbing radial and

axial loads to establish an axial driving connection between said piston and said top plate causing said piston and said top plate to move together axially while allowing relative rotation therebetween, means for exerting locking and releasing forces on said piston, whereby said piston exerts a locking and releasing force on said top plate through said bearing means.

4,353,272

APPARATUS FOR CONTROLLING THE OPERATION OF THE ENGINE-TRANSMISSION ASSEMBLY OF A MOTOR VEHICLE

Erich Schneider, Kirchheim; Helmut Fleischer, Schwieberdingen; Helmut Rembold, Stuttgart, and Alexander Witte, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

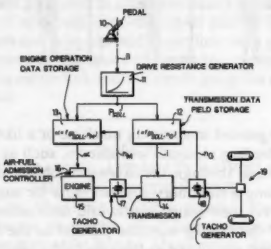
PCT No. PCT/EP78/00026, § 371 Date Nov. 17, 1979, § 102(e) Date Nov. 5, 1979, PCT Pub. No. WO79/00781, PCT Pub. Date Oct. 18, 1979

PCT Filed Dec. 7, 1978, Ser. No. 185,914

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811574

Int. Cl.³ B60K *41/00, 41/06*

U.S. Cl. 74—859 **22 Claims**



1. An apparatus for controlling an engine/transmission unit or drive train of a motor vehicle, including an operating member (10) for defining a power setpoint of the engine and at least one engine operation data storage means (13) containing characteristic power curves of said engine, the engine and the transmission being controlled by means of said at least one engine data storage means in dependence on the power setpoint in such a manner that optimum energy consumption of the engine results, comprising, according to the invention, a transmission data storage means (12) containing a characteristic transmission data field including optimum transmission i as a function of

(a) power setpoint P_{soll}, to provide for power delivery under optimum conditions, and of

(b) the vehicle velocity v_F to provide for optimum vehicle operation at the vehicle speed,

according to the relationship

$i=F(P_{soll}, v_F)$;

a first control loop connected to set the transmission ratio in accordance with the power setpoint (P_{soll}) on the basis of the transmission data field;

and a second control loop connected to set a fuel control α,

wherein the fuel input control α is related to engine operation in dependence on the resulting engine speed (n_M) in accordance with the engine power curves contained in said engine operation data storage means (13) and which defines the engine power P as a function of engine speed (n_M) and of fuel input control position α according to the relationship $P=f(n_M, \alpha)$;

and wherein the control of the transmission ratio i by said first control loop for optimum operation of the drive train has priority over control by said second control loop.

4,353,273

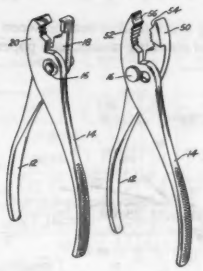
PLIERS FOR PLASTIC RADIATOR TANK REPLACEMENT

Gerald A. Freberg, Omaha, Nebr., assignor to Inland Manufacturing Company, Omaha, Nebr.

Filed Oct. 30, 1980, Ser. No. 202,303

Int. Cl.³ B25B *7/02*

U.S. Cl. 81—425 R **2 Claims**



1. In a pliers of the type comprised of first and second generally straight pivotally connected members connected at a pivot axis to define opposed jaws and opposed parallel grips, the improvement of a jaw construction having opposed jaws pivotal about the pivot axis, said pliers adapted to engage and release an L-shaped tab member having an outer tab end and an opposite tab end, said jaws comprising, in combination:

an upper jaw member and a lower jaw member, said upper jaw member including a hook member, said hook member having an arm extending radially from the axis and a tang projecting generally transversely from the arm toward the lower jaw, said arm being substantially colinear with said attached handle grip, said tang being of substantially less thickness than said arm in the plane transverse to the axis, said tang including a generally planar tab engaging land forming an obtuse angle with and also intersecting a radius extending from the axis;

said lower jaw being without a tang and defining a substantially flat fulcrum land generally parallel to and spaced apart from the upper jaw tab engaging land, said fulcrum land spaced from the axis a substantially identical radial distance as the upper jaw tab engaging land and forming a surface parallel with the tab engaging land surface and spaced from the tab engaging land surface; and

said upper jaw comprising means engageable with the outer tab end simultaneous with said lower jaw positioned at the opposite tab end to form a fulcrum point for bending the tab engaged by the hook member of the upper jaw upon a rotation of the pliers about the fulcrum point with the upper jaw moving in an arc about this lower jaw.

4,353,274

ROLL PAPER FEEDING AND CUTTING SYSTEM

Masahiro Shimizu, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1980, Ser. No. 176,146

Claims priority, application Japan, Aug. 21, 1979, 54-106855

Int. Cl.³ B26D *1/38*

U.S. Cl. 83—156 **3 Claims**

1. A copy paper feeding system comprising in combination;

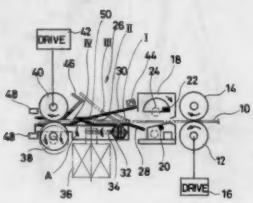
paper feed means for feeding a copy paper at a predetermined speed;

catching means for holding the leading edge of the copy paper applied through said paper feed means, said catching means comprising a feed roller connected to a drive source, a pinch roller associated with said feed roller, and a shift means for shifting said pinch roller for temporarily

forming a gap between said feed roller and said pinch roller, thereby allowing the leading edge of the copy paper to be introduced between said feed roller and said pinch roller;

means for sensing the leading edge of said copy paper as it passes between said temporarily formed gap, said sensing means thus reversing said shift means, thereby returning the pinch roller to an initial closed position, thus tightly catching said leading edge of the copy paper therebetween; and

a paper holding section disposed between said paper feed means and said catching means, said paper holding section



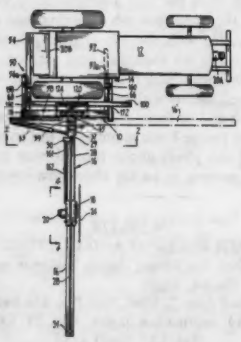
including a paper guide means and a paper depressing plate rotatably supported by a shaft for applying a depression force to said copy paper as the copy paper is introduced into said paper holding section, depressing the leading edge of said copy paper so as to direct said leading edge into the gap formed between said feed roller and said pinch roller of said catching means, said depressing plate further functioning to continue to apply a depression force to said copy paper during the curling of said paper when the leading edge thereof is held by said catching means in said closed position as said paper feed means continuously supplies the copy paper.

4,353,275

SAWING APPARATUS

Hume W. Colville, Murray St., Barham, New South Wales, Australia

Filed Sep. 23, 1980, Ser. No. 189,985
Claims priority, application Australia, Sep. 27, 1980, PE0671
Int. Cl.³ B27B *5/10*
U.S. Cl. 83—488 **18 Claims**



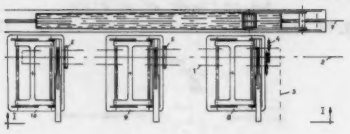
1. A sawing apparatus comprising a boom carrying a carriage movable lengthwise along the boom and at least adapted to carry a saw device, support structure adapted to be secured to a vehicle and carrying said boom, said boom being pivotal relative to said support structure so as to be positionable, by pivotal movement, at least at a first position at which, in use of the sawing apparatus with said support structure attached said vehicle and said carriage carrying said saw device, the boom extends sidewardly of the vehicle for use of the sawing apparatus by operating said saw device and moving it lengthwise of said boom, and at a second position at which, in use of the sawing apparatus with the support structure secured to said vehicle and said carriage carrying said saw device, the boom extends generally parallel to the driving direction of the vehicle for transport of the saw device, said support structure further including a first sub-frame, to which said boom is pivotally secured for said pivotal movement thereof, said first sub-frame being carried by a second sub-frame such that the first sub-frame, is movable, in use of the apparatus, generally lengthwise of said driving direction and generally vertically relative to said second sub-frame.

4,353,276

ARRANGEMENT IN MACHINES FOR PROCESSING LOGS, BLOCKS AND LIKE WORKPIECES

Bo I. Ackerfeldt, Ahusvägen 44, 260 90 Bastad, Sweden

Filed May 20, 1980, Ser. No. 151,641
Claims priority, application Sweden, May 29, 1979, 7904678
Int. Cl.³ B27B *31/04*
U.S. Cl. 83—708 **15 Claims**



1. An arrangement in a sawing machine or a like processing machine for feeding elongate workpieces, such as logs in particular, up to and through the sawing machine, said arrangement comprising a stationary support table for supporting the workpieces over their entire length, said table extending on the infeed side of the sawing machine parallel to the desired feed line for the workpieces and at least up to the sawing machine; and conveyor means for engaging workpieces resting on said support table and feeding said workpieces along said table in direction parallel to said feed line up to and into the sawing machine, said conveyor means including at least two endless conveyor chains provided with individual driving means and located beneath said support table to run in vertical planes which are parallel and located close to the vertical plane through said feed line, each of said conveyor chains being provided with at least one dog member permanently attached to the conveyor chain in such a manner that it projects in vertical direction outwards from the conveyor chain and having a narrow lateral dimension, said dog members on said individually driven conveyor chains being attached to their respective conveyor chains in a manner such that all dog members move in a common vertical plane substantially coinciding with the vertical plane through said feed line and having such a vertical extension that they, when located on the upper flight of their respective conveyor chains, project above the surface of said support table so as to be able to engage and act against the rear end surfaces of workpieces resting on said support table for feeding the workpieces up to and in to the sawing machine, and said support table being provided with a common guide slot for said dog members extending in the vertical plane through said feed line.

4,353,277

SAW CHAIN

Kay Silvon, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed May 12, 1980, Ser. No. 148,810
Int. Cl.³ B27B *33/14*
U.S. Cl. 83—833 **18 Claims**

1. A saw chain adapted to be driven around a path with a curved forward end portion, said saw chain comprising:

a plurality of cutter links alternating with guard links for preceding said cutter links,

a said cutter link having an upstanding cutter tooth and an upstanding depth gauge located forwardly of said cutter tooth, said depth gauge having a height less than that of the cutter tooth, the top of said cutter tooth, during chain movement, defining the outer periphery of said path of said saw chain,

a said guard link including an upstanding body portion having a top edge extending adjacent said outer periphery of said path of the saw chain, a rearward edge inclined up-

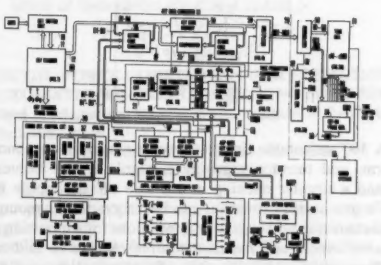
wardly and rearwardly toward said top edge substantially adjacent the depth gauge of said cutter link, and a forward edge rising comparatively steeply toward said top edge in obtuse angular relation to said top edge disposing said top edge in generally parallel relation with said outer periphery of said path and in close proximity to said outer periphery of said path over the major part of the length of said guard link wherein said guard link has a profile filling the majority of the space between the cutter tooth on a preceding cutter link and the depth gauge on a succeeding cutter link.

4,353,278

CHORD GENERATING APPARATUS OF ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu; Hideo Suzuki, Kamimura, and Makoto Kaneko, Hamakita, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,885
Int. Cl.³ G10H *1/38, 5/00, 7/00*
U.S. Cl. 84—1.01 **16 Claims**



1. In an electronic musical instrument, an automatic chord performance system controllable by depression of keys in a certain range of a single keyboard, comprising:

first priority circuit means for ascertaining in said certain range a depressed key of highest or lowest priority, and for providing a signal identifying said key for use as the root note of said chord,

second priority circuit means for ascertaining in said certain range the depressed key or keys of next highest or lowest priority, and for providing signals identifying such key or keys to designate a chord type, and

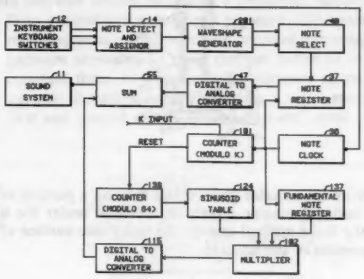
tone generation means for producing musical tones corresponding to the chord having the root note identified by the signal provided by said first priority circuit means and a chord type identified by the signals provided by said second priority circuit means.

4,353,279

APPARATUS FOR PRODUCING ENSEMBLE TONE IN AN ELECTRIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Feb. 2, 1981, Ser. No. 230,242
Int. Cl.³ G10H *1/02, 7/00*
U.S. Cl. 84—1.24 **13 Claims**



1. In combination with a musical instrument having a waveshape memory storing a plurality of waveshape data words corresponding to the amplitudes of evenly spaced points defining a period of a musical signal and in which said waveshape data words are sequentially and repetitively read out of the waveshape memory and transferred to a wavehsape digital-to-analog converter to be converted into musical signals at a rate corresponding to the pitch of the generated musical tone, apparatus for producing an ensemble effect comprising;

computing means for computing said plurality of waveshape data words stored in said waveshape memory,

a sinusoid table storing a plurality of trigonometric sinusoid values,

a clock providing timing signals at a rate corresponding to the pitch of said generated musical tone,

a first addressing means responsive to said timing signals for reading out waveshape data words stored in said waveshape memory,

a first converting means comprising said waveshape digital-to-analog converter for converting waveshape data words read out of said waveshape memory into a first analog signal,

a second addressing means responsive to said timing signals for reading out trigonometric sinusoid values from said sinusoid table,

signal combination means responsive to trigonometric sinusoid values read out from said sinusoid table wherein a second analog signal is generated, and

a summing means for adding said first analog signal and said second analog signal to produce a musical tone having said ensemble effect.

4,353,280

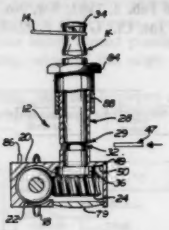
TUNING DEVICE

Robert J. Spercel, 3214 W. 139, Cleveland, Ohio 44111

Filed Jan. 5, 1978, Ser. No. 867,133
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—306 **25 Claims**

1. A method of assembling a stringed instrument tuning device, said method comprising the steps of providing a housing having a main portion adapted to at least partially enclose a gear and a tubular portion integrally formed with and extending outwardly from the main portion, providing a shaft having an annular groove disposed intermediate opposite ends of the shaft, positioning the shaft in the tubular portion of the housing, and plastically deforming the tubular portion of the housing inwardly into engagement with the shaft to hold the shaft

against axial movement relative to the housing, said step of plastically deforming the tubular portion of the housing including the steps of applying a force against an outer side surface of the tubular portion of the housing at a location radially outwardly from the annular groove and moving a portion of the housing into the annular groove in the shaft under the influence of the force applied against the outer side surface of the tubular portion of the housing.



4,353,281

SPLIT E FLUTE AND SPLIT E MECHANISM THEREFOR

Emerson L. DeFord, Elkhart, Ind., assignor to Emerson Musical Instruments Inc., Elkhart, Ind.

Filed Jan. 29, 1981, Ser. No. 229,757
Int. Cl.[3] G10D *7/02, 9/04*
U.S. Cl. 84—384 3 Claims

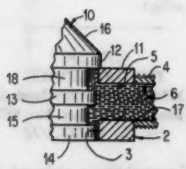
1. In a flute of the type having a split G key mechanism and a split E mechanism, the improvement wherein said split E mechanism comprises a short arm attached to the F-sharp key and extending therefrom in a manner so as to overlie an adjacent G-A combination key of the split G key mechanism for facilitating the playing of the E above the staff note by causing said G-A key to be closed during normal fingering of said note.

4,353,282

METHOD AND DEVICE FOR PROJECTILE LUBRICATION

Herbert H. Holt, Star Rte., Alpine, Tenn. 38543

Filed Nov. 28, 1980, Ser. No. 211,406
Int. Cl.[3] F42B *31/02*
U.S. Cl. 86—19 6 Claims



1. A device for placing lubricant in a plurality of annular grooves of a projectile comprising:

a. a structure containing an opening dimensioned to hold said projectile;

b. a passage in said structure extending through an exterior wall of said structure creating an interior opening and an exterior opening, said passage positioned to enter said structure so that said interior opening of said passage is positioned at the depth of said structure where said plurality of annular grooves of said projectile are held;

c. a connector secured to said structure at said exterior opening of said passage;

d. a connector passage within said connector and aligned with said exterior opening of said passage, and

e. said projectile comprising a nose section with a bearing portion dimensioned larger than the diameter of said opening in said structure whereby when said projectile is held in said structure, said bearing portion will rest on an external bearing surface of said structure sealing the top of said opening in said structure,

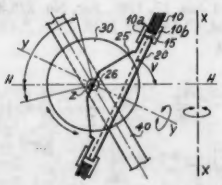
whereby said lubricant may pass through said connector passage to said passage and into said plurality of annular grooves of said projectile.

4,353,283

FIRING TURRET FOR A VEHICLE, AND VEHICLE INCLUDING SUCH A TURRET

Roger Crepin, 173, bl. Haussmann, 75008 Paris, France

PCT No. PCT/FR78/00009, § 371 Date Aug. 10, 1979, § 102(e) Date Aug. 10, 1979, PCT Pub. No. WO79/00852, PCT Pub. Date Nov. 1, 1979
PCT Filed Jul. 12, 1978, Ser. No. 143,998
Int. Cl.[3] F41F *21/06*
U.S. Cl. 89—37 G 15 Claims



1. A 360° orientable firing turret for assembly on a mobile platform, said turret comprising a cupola which includes a roof, and a circular opening in one side of said cupola from which a gun barrel extends, a gun barrel cradle for mounting said gun barrel in said cupola and trunnions for supporting said gun barrel cradle and means operative relative to said trunnions for correcting any tilt angle of said trunnions relative to a site wherein the means for correcting the tilt angle of said trunnions comprise:

a disc having a central opening, said barrel cradle being encased in said central opening in said disc.

a ring concentrically disposed in said circular opening provided in said cupola, said disc including a track rotatably mounted in said ring, a toothed sector disposed on said disc, a servo-motor for rotating said disc according to a vertical disposition of said site and a mechanism related to said gun barrel cradle for pivoting said gun barrel cradle in elevation,

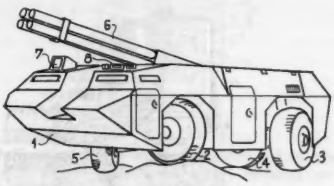
a sighting device mounted within said cupola on a side wall of said cupola, said sighting device being mechanically coupled to said servo-motor and said sighting device includes an optic input which crosses through an opening provided in said roof of said cupola.

4,353,284

CARRIED WEAPON SYSTEM WITH A HIGH ORIENTATION MOBILITY

Henri Billottet; Henri Augy, and Andre Quoy, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 2, 1980, Ser. No. 146,332
Claims priority, application France, May 8, 1979, 79 11628
Int. Cl.³ F41F *23/10*
U.S. Cl. 89—40 B 6 Claims



1. A turretless weapon system comprising:
a low-profile vehicle including:
a vehicle body having a longitudinal axis and formed with a channel extending along said axis and opening upwardly, downwardly and toward a front end of the vehicle,
a chassis supporting said body,
a plurality of driving and guide wheels supporting said chassis on the ground and spaced apart from one another,
means for independently driving said wheels, and
means for pivoting said wheels so that said vehicle is rotatable about a point at the center of a circle to which said wheels are tangent;
a cradle disposed in said channel and swingable about an elevation axis perpendicular to said longitudinal axis; and
a weapon having at least one tube for launching a projectile mounted in said cradle for elevation from and lowering into said channel through an elevation range of about −15° to +90° whereby bearing of said weapon upon a target through a range of about 360° is effected by autorotation of the vehicle about said center.

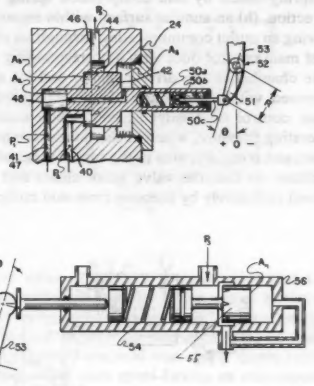
4,353,285

RECOIL FORCE CORRECTION FOR ELEVATION IN AUTOMATIC WEAPONS EMPLOYING SOFT RECOIL

Roland A. Magnuson, Seattle, Wash., assignor to PACCAR Inc., Bellevue, Wash.

Filed Nov. 26, 1979, Ser. No. 97,556
Int. Cl.³ F41F *19/02*
U.S. Cl. 89—42 B 1 Claim

1. Apparatus for providing a relatively constant recoil travel length for a soft recoil weapon of the type having a carriage pivotally mounted for varying elevational position, a gun barrel capable of recoiling and counter-recoiling in said carriage between a rearward loading station and a forward firing station, comprising:
fluid cushioning means having actuator means coupled to the gun barrel for movement therewith and moving fluid through a variable orifice in response to said movement for arresting the recoil movement of the gun barrel in a controlled manner, including variable throttling means for decreasing or increasing the resistance to flow from the actuator means in response to the amount of the pressure differential of the fluid across the variable orifice,
pressure storing means for storing pressurized fluid from the cushioning means for providing counter-recoil pressure to said actuator means,
means for sensing the elevational angle of the gun barrel, and
gravity compensation means including first control means responsive to the angle sensing means for varying the throttling means to change the resistance to flow in response to elevation or depressing angle changes in the gun barrel for compensating the fluid cushioning means from gravity effects due to such angle changes, said gravity compensation means including second control means responsive to said angle sensing means for adjusting the fluid pressure from said recuperative pressurized fluid storing means to said actuator means for adjusting the counter-recoil force on the gun barrel to compensate for the gravity effects of such angle changes of the gun barrel,
said variable orifice including a parabolic variable orifice flow control valve having a pressure differential during recoil equal to a predetermined constant percentage of the pressure necessary to bring the gun barrel to rest with a constant force in the remaining distance of recoil, said variable throttling means including a valve spool having first and second axially spaced opposed equal cross-sectional areas, a small, axially spaced, third cross-sectional area which is a predetermined percentage of each of the first and second areas and on the same side of the spool as said first area, and a spring-loaded stem for adjusting the force balance on the spool, said first control means including means for moving the stem in response to angle adjustments of the gun barrel, means for connecting the pressure differential from across the parabolic flow control valve to said first and second areas respectively with the higher pressure acting on the second area and means for connecting the pressure from upstream of the parabolic flow control valve also to said small third cross-sectional area whereby the constant pressure differential acting on the first and second areas plus the pressure acting on said third area attempts to keep said spool balanced while said stem moving means responsive to angle adjustments of the gun barrel overcomes said balance.



4,353,286

HYDRAULIC CONTROL SYSTEM WITH A PIPELINE ANTIBURST SAFETY DEVICE FOR A DOUBLE ACTING DRIVE CYLINDER

Jacob Wetter, Düsseldorf, Fed. Rep. of Germany, assignor to MDS Mannesmann Demag Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,451
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928737
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—5 5 Claims

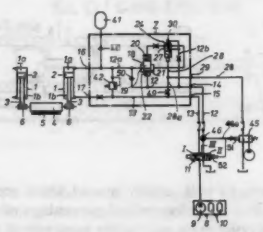
1. A hydraulic control system with a pipeline antiburst safety device for a double acting drive cylinder for adjusting and securing the position of a machine part, comprising:

a high pressure source for providing a working pressure,

first and second main control ducts extending to said drive cylinder, said first main control duct normally carrying working pressure which acts opposite to an operationally conditioned reaction force that is normally applied to the piston of said cylinder,

a main control valve connected in said first and second main control ducts, said main control valve having two control positions for alternatively controlling the ducts for providing working pressure and return flow, and a control position for relieving said main control ducts in the event of a pipeline burst,

a leak-proof stop valve situated close to the drive cylinder and disposed within the first main control duct, said stop valve having a compression spring and a valve spool with three control surfaces, namely (a) a largest control surface which is spring-biased by said compression spring in the closing direction, (b) an annular surface within an annular chamber having an outlet communicating through an extension of the first main control duct with a corresponding working pressure chamber in the drive cylinder and (c) an end surface disposed within a pressure chamber into which said first main control duct extends, and which constantly carries operating pressure, wherein the largest control surface opposes and is equal in area to the sum of areas of the two other surfaces, so that the valve spool closes and is maintained closed exclusively by pressure from said compression spring



which acts on the largest control surface when all surfaces are biased by the same hydraulic pressure,

a non-return valve, arranged parallel with the stop valve and biased closed by means in the same sense as said stop valve between said extension of said first main control duct and the first main control duct,

a leak-proof pilot valve situated close to the stop valve and having a spool which is biased in one control direction via a pilot duct by a normally applied pilot pressure and is spring-biased in the other control direction by a spring in a pressure chamber communicating with the first control duct, said pilot valve spool being operative to release working pressure from the first main control duct into a duct which extends into the spring-biased pressure chamber of the stop valve when pilot pressure is applied and to close the connection of the spring-biased pressure chamber with the first main control duct and connect the duct which extends to the spring-biased pressure chamber of the stop valve to a duct which extends to the annular chamber of the stop valve with the annular surface when pilot pressure is removed,

a means for applying pilot pressure to said pilot duct when no pipe burst is present and removing pilot pressure from said pilot duct when a pipe burst is present,

a pressure maintaining accumulator connected via a non-return valve to the extension of the first main control duct, and

a pressure limiting valve between the extension from the outlet of the stop valve and the second main control duct for limiting maximum pressure.

4,353,287

BRAKE BOOSTER

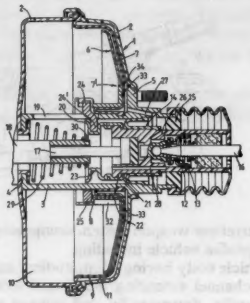
Rolf Weiler, Frankfurt-Sindlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 143,976

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918910

Int. Cl.³ F15B *9/10*; F01B *19/00*; F16J *3/02*

U.S. Cl. 91—369 A **10 Claims**



1. A mechanically controlled vacuum brake booster comprising:

a vacuum housing having a longitudinal axis;

a tube disposed in said vacuum housing coaxial of said axis connected to both end walls of said vacuum housing, said tube having at least two longitudinal slots therein;

at least one movable wall disposed in said vacuum housing coaxial of said axis dividing said vacuum housing into a vacuum chamber and a work chamber, said movable wall having a hub disposed coaxial of said axis, said movable wall being sealed and displaceable relative to said tube;

a pressure control valve having a control casing disposed in said housing coaxial of said axis and extending into said tube; and

at least two semicircular segments each having at least one projection extending radially inwardly, said two semicircular segments being rigidly fastened to said hub adjacent the end thereof in said vacuum chamber and said projections extending through said slots and coupled to the adjacent end of said control casing by a coupling means, said two projections acting via said control casing on a push rod disposed coaxial of said axis to actuate a master brake cylinder piston.

4,353,288

ROTARY SLIDE STEERING VALVE FOR AUXILIARY POWER STEERINGS

Heinrich Holub, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,327

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856606

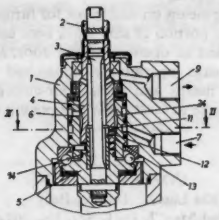
Int. Cl.³ F15B *9/10*

U.S. Cl. 91—375 A **8 Claims**

5. A rotary valve for a booster steering system of the kind having a rotary valve plug encompassed by a valve sleeve within a housing and including respective high and low pressure coacting grooves and bores and inlet and return passage means in said housing whereby rotation of said rotary valve plug controls pressure flow to a servomotor and return flow therefrom during a steering operation; the improvement which comprises:

a member (14) having passage means (13) and said rotary valve plug having passage means (11, 12); wherein the

respective passage means are comprised in said return flow means and overlap when said rotary valve plug is in neutral position to permit unrestricted return flow through said return passage means from a servomotor, and



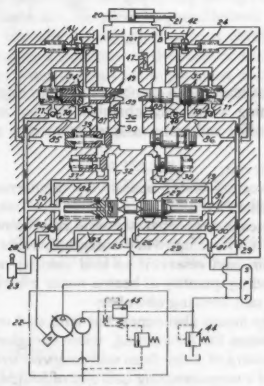
means affording relative motion between said member and said rotary valve plug responsive to a steering operation to reduce said overlap for effecting a throttled return flow.

4,353,289

POWER TRANSMISSION

Kurt R. Lonnemo, Bloomfield Hills, Mich., assignor to Sperry Corporation, Troy, Mich.

Filed May 29, 1980, Ser. No. 154,473
Int. Cl.³ F15B *11/04*
U.S. Cl. 91—420 12 Claims



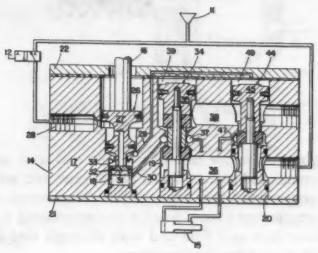
1. A hydraulic control system comprising
a hydraulic actuator having opposed openings adapted to alternately function as inlets and outlets for moving the element of the actuator in opposite directions,
a pump for supplying fluid to said actuator,
meter-in valve means to which the fluid from the pump is supplied,
said meter-in valve means being pilot controlled by alternately supplying fluid at pilot pressure to said meter-in valve means for controlling the direction of movement of the actuator,
a pair of lines extending from said meter-in valve means to said respective openings of said actuator,
meter-out valve means associated with each opening of the actuator for controlling the flow out of said actuator,
said meter-out valve means being pilot operated by the pilot pressure,
and means for sensing a predetermined drop in pressure in the line supplying fluid to one opening of said actuator caused by a runaway load in one direction and operating said meter-out valve means to meter flow out of the other opening of said actuator,
said last-mentioned sensing and operating means comprising a restriction in the pilot line actuating the meter-out valve means for controlling flow out of the other opening of said actuator, a sensing line extending from said pilot line to said line supplying pump pressure to said one opening of said actuator and a check valve in said sensing line.

4,353,290

PNEUMATIC CONTROL VALVE AND CIRCUIT

Robert K. Hoffman, and Mark A. Kavanaugh, both of Plainwell, Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 26, 1979, Ser. No. 97,261
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—461 11 Claims



1. A control valve comprising a main valve and a pilot interlock valve; said main valve including a main inlet port, an exhaust port, a cylinder port, main valve means opening and closing communication between said cylinder port and said main inlet and exhaust ports, said main valve means including a signal chamber and a main spool having an area exposed to pressure in said signal chamber; said pilot interlock valve including a pilot inlet port, an interlock port communicating with said cylinder port, a signal port communicating with said signal chamber, pilot valve means controlling communication between said signal port and said pilot inlet and interlock ports, said pilot valve means including a pilot spool movable between an interlock position and an actuating position, and said pilot valve means closing communication between said pilot inlet port and said signal port and opening communication between said interlock port and said signal port when said pilot spool is in said in said interlock position.

4,353,291

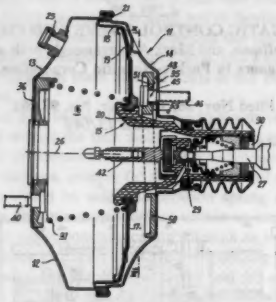
BRAKING BOOSTER SERVO UNIT HAVING A FIXING BRACING MEMBER

Jean J. Hauduc, Tremblay-les-Gonesse, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Mar. 30, 1981, Ser. No. 249,287
Claims priority, application France, Apr. 25, 1980, 80 09346
Int. Cl.³ F01B *19/00*; F16J *3/02*
U.S. Cl. 92—99 4 Claims

1. A braking booster servo unit of vacuum type comprising a casing having an axis of symmetry along which an actuating force is transmitted by means of axial actuating rod connected to the brake pedal, said casing having two substantially parallel first and second end walls, said first wall being attached to a fixed part of a vehicle, said second wall holding a brake actuating master cylinder in axial alignment with said actuating rod for receiving said actuating force at its input, said first end wall having an inside face, said servo unit being designed to be attached to said fixed part by means of two screws, each of said screws having threaded portions which project perpendicularly outwardly of said first wall substantially parallel to said axis of summetry and on respective sides thereof, said screws being in contact with the inside face of said first wall by way

of an annular bracing member, wherein the improvement consists in that said bracing member is elastic and has a face with a curved surface, said curved surface having diametrically opposed first and second areas and angularly offset diametrically opposed third and fourth areas, said first and second



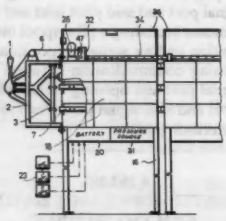
areas engaging said inside face of said first end wall, said third area being connected to one of said two screws and said fourth area being connected to the other of said two screws, said two screws on attachment to said fixed part transmitting a variable prestress force into said first end wall through said first and second areas of said bearing member.

4,353,292

ASSEMBLY FOR STORING AND FACILITATING APPLICATION OF BREATHING DEVICES

Istvan Almasi; Ferenc Kassai, and Attila Erdelyi, all of Budapest, Hungary, assignors to Banyaszati Aknamelyito Vallalat, Budapest, Hungary

Filed Sep. 3, 1980, Ser. No. 183,926
Int. Cl.³ E21F *11/00*
U.S. Cl. 98—50 **11 Claims**



1. An assembly installable in a work area for storing breathing devices and for facilitating the application thereof by personnel endangered by contaminated air at said work area, said assembly comprising:

a frame;

a plurality of compartments arranged in rows on said frame, said compartments serving as receptacles for respective breathing devices;

cover means including at least one spring-loaded door for closing said compartments at a common side thereof, said door having a hook projecting inwardly in a closed state of said door, said cover means including a pivotably mounted latch engageable with said hook for coacting therewith to close said door;

actuator means on said frame for opening said door, said actuator means including a push rod engageable with said latch to pivot same, a spring-loaded release member reciprocatably mounted on said frame and engageable with said rod to shift same, and a lever cammingly engaging said release member to move same upon a pivoting of said lever;

signal-generating means on said frame for emitting a signal indicating to said personnel the location of said assembly at said work area;

air-circulating means on said frame for furnishing a supply of oxygen to a portion of said work area upon a pivoting of said lever and an opening of said door; and

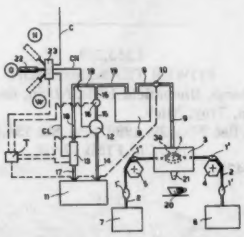
activating means operatively connected to said signal-generating means and to said air-circulating means for actuating same at least upon an opening of said door.

4,353,293

COFFEE MACHINE

Ernesto Illy, 8, Via Locchi, Trieste, Italy

Filed May 7, 1981, Ser. No. 261,681
Claims priority, application Italy, Jun. 10, 1980, 22675 A/80
Int. Cl.³ A47J *31/24*
U.S. Cl. 99—283 **7 Claims**



1. In a coffee machine, a combination comprising

means defining a brewing chamber having an outlet for brewed coffee and being adapted to receive pods of coffee;

a water reservoir;

means for heating water operatively connected with said brewing chamber;

first pump means connected with said reservoir and heating means for forwarding, when energized, a first quantity of water from said reservoir to said heating means and a corresponding quantity of heated water from said heating means to said brewing chamber;

second pump means also connected with said reservoir and heating means for forwarding, when energized, a second larger quantity of water from said reservoir to said heating means and a corresponding quantity of heated water from said heating means to said brewing chamber; and

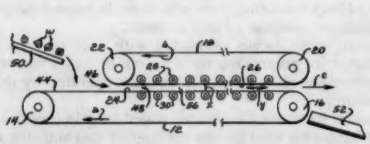
control means for selectively energizing one of said first and second pump means.

4,353,294

NUT CRACKING APPARATUS

Robert G. Dudley, P.O. Box 1731, Monterey, Calif. 93940

Filed Aug. 27, 1979, Ser. No. 70,157
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—575 **10 Claims**



1. Apparatus for cracking or shelling an encapsulated produce such as nuts and seeds in order to recover their meats largely intact comprising,

upper and lower belts having generally horizontal facing runs which are aligned one over the other and continuously move in the same direction toward the discharge end of the apparatus, the facing run of the upper belt moving at a faster rate than that of the lower belt;

a set of parallel-spaced, transversely-extending, rotatably-journalled rollers—plural in number—behind each said belts and over which the facing runs of said belts engagingly pass;

the rollers of one set being paired with and vertically aligned over the rollers of the other set; and

the axes of said paired rollers being stationary and fixed at a distance apart such that the facing runs of the moving belts as they pass between the paired rollers define a succession of transversely extending pressure gates separated by intervening pressure relief areas, each said gates having an unchanging fixed height which is only slightly less than the largest diameter (cross-sectional dimension) of the nuts or other encapsulated produce fed by the belts through the gates; and

the pressure relief areas disposed between the pressure gates having an extent which in the direction of belt movement is greater than said height of the gates and several times the diameter of the rollers;

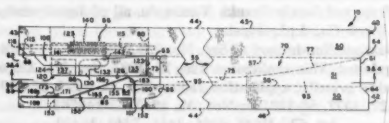
the belts being so tensioned that the faster moving facing run of the upper of said belts in the relief areas engages the encapsulated produce as they are carried by the facing run of the lower belt toward the pressure gates, so as to exert an orienting force on the nuts which urges the nuts into a posture where their largest diameter is presented vertically as the nuts are carried by the facing run of the lower of said belts into the pressure gates defined by said paired rollers whereby cracking pressure is enforced solely on the peripheral portions of the nuts at their said largest diameter when the nuts are so postured, said orienting and cracking pressures being regularly relieved and reinstituted.

4,353,295

WIRE TYING FIXTURE

Ernest Kandarian, Clovis, Calif., assignor to Fresno Bag Co., Inc., Fresno, Calif., a part interest

Filed Jul. 10, 1980, Ser. No. 167,237
Int. Cl.³ A01F *15/14;* B65B *13/24*
U.S. Cl. 100—8 **6 Claims**



1. A wire tying fixture comprising:

A. an elongated guide having a longitudinal channel providing open opposite ends and a slot coextensive with the channel, said channel having a tying station therein and being adapted to receive wires thrust from the opposite ends into overlapping relation at the tying station, said wires being preformed to interlace when engaged and overlapped to a predetermined extent and to tie when subsequently tensioned;

B. a false bottom pivotally mounted in the slot at the tying station for movement about an axis disposed longitudinally of the channel at one side thereof for movement between a closed position extended across the channel to support the wires in the channel and a retracted position pivoted out of the channel to release the wires after they are tied, the false bottom having a notch adapted to receive and to hold one of the wires to facilitate thrusting of the other wire into overlapping relation therewith;

C. resilient means urging the false bottom into a closed position; and

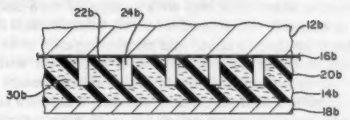
D. a leaf spring mounted at the tying station at the side of the channel opposite to said one side presenting a resilient camming surface convergent with said one side in the direction said other wire is thrust into the channel to urge said wires towards said one side into interlacing engagement over the false bottom.

4,353,296

USE OF ANISOTROPIC RUBBER FOR VENTA-NIP ROLLS

Albert W. Beucker, Factoryville, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 23, 1981, Ser. No. 246,659
Int. Cl.³ B30B *9/20*
U.S. Cl. 100—121 **9 Claims**



1. A roll of the type used in conjunction with a backing means to form a nip through which a web passes, said roll comprising:

a resilient outer elastomeric cover having a plurality of alternating circumferentially extending ribs and grooves,

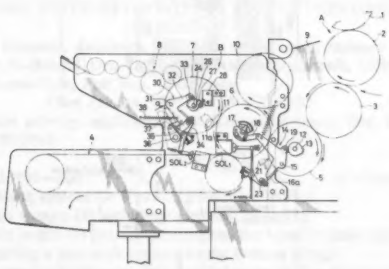
said cover being characterized by having anistropic properties including a modulus of elasticity as measured in directions transverse to the rotational direction of the roll which is substantially greater than the modulus of elasticity measured in directions circumferentially of the roll.

4,353,297

NUMBER PRINTING MACHINE FOR OFFSET PRESS

Nobuhiko Fujisawa, Fukuyama, and Yoshinori Honkawa, Fuchu, both of Japan, assignors to Ryobi, Limited, Hiroshima, Japan

Filed Apr. 2, 1981, Ser. No. 250,377
Claims priority, application Japan, Apr. 7, 1980, 55-47489[U]
Int. Cl.³ B41L *49/02;* B41F *7/06, 13/28*
U.S. Cl. 101—77 **5 Claims**



1. A number printing machine for an offset press comprising: a transfer drum rotatably mounted on a shaft, a number printing impression cylinder and a numbering-device mounting drum mounted on a shaft disposed between an impression cylinder and a sheet delivery section in the stated order; said numbering machine comprising: a photoelectric device disposed at a predetermined position with respect to said transfer drum, said photoelectric device being adapted to detect the presence of a printing sheet; a first solenoid; a first switch coupled to be operated by said photoelectric device thereby to

energize said first solenoid; an impression cylinder actuation mechanism and a first cam adapted to rock said impression cylinder actuation mechanism fixedly secured to said shaft of said transfer drum, said first solenoid being adapted to latch said actuation mechanism upon actuation of said first solenoid to cause said number printing impression cylinder to approach said numbering-device mounting drum; a counter having a timing input cam; a second switch operated by said first switch and said timing input cam of a counter, said timing input cam being secured to said shaft of said numbering device mounting drum, said counter being adapted to count a count signal applied thereto through said second switch; a second cam secured to said shaft of said numbering-device mounting drum; a timing mechanism disposed to be rocked by said second cam, said second cam and said timing input cam being fixedly secured to said shaft of said numbering-device mounting drum; a numbering cam operated in association with said timing mechanism; a second solenoid; a numbering device having an input cam follower; a counter output contact which, when a count value of said counter coincides with a value set on a dial unit, is closed to energize said second solenoid, whereby said timing mechanism is latched to cause said numbering cam to be positioned such that said numbering cam is in contact with said cam follower of said numbering device so that a present number is replaced by a next succeeding number, wherein a successive number printing operation and a same number printing operation are selectively carried out by changing a value set on said dial unit.

4,353,298

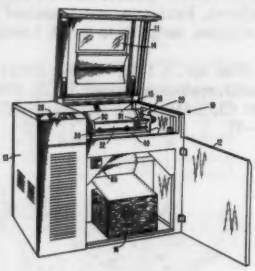
PARTIAL LINE TURNAROUND FOR PRINTERS

Gregory N. Baker; Willard B. Greene, both of Boca Raton; Ludwig R. Siegl, Highland Beach; Delbert C. Thomas, Jr., Boca Raton; Charles J. Weber, Boca Raton, and Lee T. Zimmerman, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,494

Int. Cl.³ B41J *3/12*

U.S. Cl. 101—93.05 **16 Claims**



1. A line turnaround arrangement for a printer, comprising:

a printer unit, said printer unit incorporating forms feed assembly means for moving a form for printing at a print line, and said printer unit further having a ribbon drive assembly;

a wire matrix print assembly in said printer unit, said print assembly incorporating print wires and print wire actuators arranged in print heads spaced at regular predetermined intervals, said print assembly being mounted for reciprocated printing movement along said print line;

wire image means for providing signals on a selective basis to said printer unit to activate said print wire actuators to produce character by means of dots on said forms during printing operations, said signals being supplied to said print assembly as said print assembly moves along said print line;

control means for producing turnaround input signals indicative of the number of print heads in said print assembly, the character density, the print head spacing, and the starting point of the last print head in said print assembly;

said control means utilizing said turnaround input signals to produce stopping and turnaround control signals indicative of printing operations of said print assembly requiring (1) a nominal line of printing defined as the number of print positions a print head can print times the number of print heads in said print assembly, (2) less than a nominal line of printing, and (3) an extended line of printing involving printing of characters beyond a nominal line of printing up to a predetermined maximum line length, said stopping and turnaround control signals being indicative of selected stopping and turnaround points for said print assembly in individual lines to be printed;

means responsive to Print Commands to move said print assembly along said print line in order to print characters in individual lines of printing;

emitter means operable during movement of said print assembly along said print line to provide emitter signals indicative of the positional location of said print assembly and for defining successive stopping and turnaround points in a line of printing in said printer unit during printing operations; and

said control means further being responsive to said stopping and turnaround control signals and emitter signals from said emitter means to control stopping, turnaround and movement of said print assembly for printing of (1) a nominal line of printing, (2) less than a nominal line of printing, and (3) an extended line of printing.

4,353,299

AUTOMATIC CONTROL SYSTEM FOR OFFSET PRINTING MACHINE

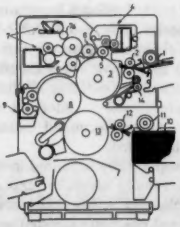
Kazuo Murai; Kenji Hashimoto; Kiyoshi Fukushima, all of Tokyo, and Sumio Suzuki, Yamagata, all of Japan, assignors to Ricoh Co., Ltd., Japan

Continuation-in-part of Ser. No. 952,536, Oct. 18, 1978, abandoned. This application Jan. 16, 1981, Ser. No. 225,606

Claims priority, application Japan, Oct. 22, 1977, 52-139559; Oct. 27, 1977, 52-128137; Nov. 30, 1977, 52-142585

Int. Cl.³ B41F *7/06, 7/36, 7/40, 31/30*

U.S. Cl. 101—144 **13 Claims**



1. An improved automatically controllable offset printing machine having eight discrete states of operation in each cycle, the machine comprising a drive motor arranged to be ener-

gized during each but the first of the eight states of operation, an ink kneading device operatable during the second of said states of operation, a rotatable cylinder for supporting a removable master plate, a master plate feeder operable only during the third of said states to feed a master plate to said master cylinder, an etching device operable only during the third of said states and including a roller for applying an ink-repellent etching solution to a master plate when mounted on said master cylinder, an ink device operable only during the fourth of said states for applying ink to a master plate, a rotatable blanket cylinder operable only during the fifth of said states and arranged to engage said master cylinder to receive an ink image from a master when on said master cylinder, a sheet feeder operable during the sixth and eighth of said states for feeding copy sheets to said blanket cylinder, an impression cylinder for urging copy sheets against said blanket cylinder, cleaning means operable only during the seventh of said states for cleaning said blanket cylinder, master plate ejection means operable only during the seventh of said states for ejecting a used master plate from said master cylinder, a control shaft mechanism including a control shaft arranged to be located in a first position during the second, third, seventh and eighth states to create a mechanical condition such that at least the inking device is disengaged from a master plate when on said master cylinder, and arranged to be located in a second position during the fourth, fifth and sixth states to create a mechanical condition such that at least the inking device is in engagement with a master plate when on said master cylinder, a cam and linkage mechanism operable to switch the control shaft between the first and second positions, and drive means operable to actuate said cam and linkage mechanism to cause the control shaft to switch between the first and second positions, the improvement comprising (a) shaft position detecting means for detecting the actual position of the control shaft, (b) an instruction decoder having eight output terminals to decode a stop signal for said drive motor, an ink knead signal for controlling the operation of said ink kneading device, an etch signal for controlling the rotation of the roller in said etching device, an ink form signal for controlling the operation of said ink forming device, a transfer signal for effecting engagement of said master and said blanket cylinders, a print signal for controlling the operation of said sheet feeder, a clean signal for said cleaning means, and a final signal, (c) a shaft position judging circuit connected to the instruction decoder and the shaft position detecting means, said shaft position judging circuit including first gate means to designate a desired position for the control shaft in each of said states, second gate means responsive to the desired position and actual position of the control shaft to energize the drive means of the control shaft mechanism when the designated and actual positions are not the same, and third gate means to provide either a first position agreement signal or a second position agreement signal respectively when the control shaft is in the desired first or second position, (d) a synchronizing unit for generating a synchronizing pulse each time said master cylinder makes one complete revolution, (e) a binary counter arranged to be enabled by a respective one of etch, ink form, transfer and clean signals to count the synchronizing pulses, (f) a sequence counter arranged to be enabled by the etch and clean signals to count the synchronizing pulses, said sequence counter also producing a signal for making the master plate feeding operation and the master ejection operation effective during a period of corresponding to one complete revolution of the master cylinder during the presence of the etch signal, and subsequently, producing an end signal when the master cylinder has rotated through a predetermined number of revolutions, (g) a presettable copy number counter arranged to count the number copy sheets passing through the machine during the printing operation and to produce an output signal when the counted value coincides with the preset value, (h) operation duration setting means including four independent rotary switches each presettable to a value indicative of the desired period respectively for etching, ink forming, transferring and cleaning operations, and a coder responsive to the setting of each said rotary switch to produce a binary output signal corresponding thereto, (i) a coincidence circuit for comparing the instantaneous count of the binary counter with each output of said coder and to provide a coincidence signal when coincidence is detected, (j-1) signal conversion means having a diode matrix, (j-2) jump gate means having a first AND gate which permits the passage of the ink knead signal so as to produce an etching instruction of four-bit code in the diode matrix when the first position agreement signal is produced, a second AND gate which permits the passage of the etch signal to produce an inking instruction of four-bit code in the diode matrix when the coincidence signal is produced, a third AND gate which permits the passage of the ink form signal to produce a transfer instruction of four-bit code in the diode matrix when the coincidence signal is produced, a fourth AND gate which permits the passage of the transfer signal to produce a printing instruction of four-bit code in the diode matrix when the coincidence signal is produced, a fifth AND gate which permits the passage of the print signal to produce a cleaning instruction of four-bit code in the diode matrix when the output signal from the copy number counter is received, a sixth AND gate which permits the passage of the clean signal to produce a final instruction of four-bit code in the diode matrix when the coincidence signal is produced, and a seventh AND gate which permits the passage of the final signal from the instruction decoder to produce a stop instruction of four-bit code in the diode matrix when the end signal is produced at the sequence counter while a single mode signal is produced for single mode operation, and (j-3) a first detector to detect the presence of a signal at any one of the AND gates in the jump gate means, (k) a single pulse generator connected to the first detector to generate a clocked clock pulse synchronized with the synchronizing pulses from an oscillator in response to an output signal from the first detector, (l) a register arranged to store an instruction code from the diode matrix in response to the clocked clock pulses and arranged to apply the stored instruction to the instruction decoder for conversion of the instruction into a said signal corresponding to the code stored by the register, (m) an auto start switch and (n) start gate means responsive to actuation of the auto start switch when a stop signal is produced by the instruction decoder, to supply a signal indicative of the ink kneading state to the register, to supply a signal for generating a clocked clock pulse to the single pulse generator, and to produce a motor start signal, the binary counter and said sequence counter being reset by the clocked clock pule from the single pulse generator.

4,353,300

INKING SYSTEM FOR ROTARY OFFSET PRINTING MACHINE

Georg Schuster, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach-am-Main, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,132

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950163

Int. Cl.³ B41F *31/02*

U.S. Cl. 101—365 **12 Claims**

1. Inking system for a printing machine having

an ink trough (1) including a bottom plate (3);

a duct roller (2) positioned adjacent the bottom plate while leaving a gap with respect to the bottom plate;

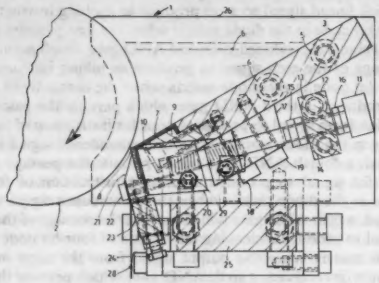
a doctor blade (8) extending parallel to the duct roller in said gap to control the thickness of the ink film picked up by the duct roller;

and a plurality of control screws (11) secured to the trough (1), located beneath the bottom plate (3) and transferring adjusting force to the doctor blade to adjust and select the position thereof with respect to the duct roller at selected axial zones of the duct roller by moving the doctor blade in said gap toward and away from the duct roller,

and comprising,

an elongated elastic bridging element (7) for bridging said gap having respectively mutually angled plate portions, of

which one plate portion is clamped to the bottom plate and the other plate portion is clamped to the doctor blade at the side thereof remote from the duct roller (2), said



bridging element preventing escape of ink from above the bottom plate through a gap between the doctor blade and the bottom plate and to the region of the control screws.

4,353,301

SMOKE GRENADE

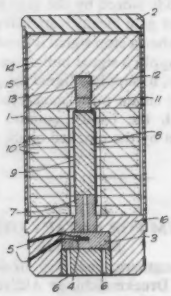
Kjell O. Jacobsen, Raufoss, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Continuation of Ser. No. 16,375, Mar. 1, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,005

Claims priority, application Norway, Mar. 8, 1978, 780818

Int. Cl.³ F42B *113/44*

U.S. Cl. 102—334 **2 Claims**



1. A smoke grenade for producing smoke for screening purposes, comprising: a casing containing a discharge composition for propelling the casing, a primer positioned to ignite the discharge composition, a first delay means, an ignition/bursting composition contained in a disruptable tube and positioned to be ignited via said first delay means, after a predetermined delay, by said discharge composition, and a set of easily ignitable annular disc shaped smoke charges surrounding the ignition/bursting change and positioned to be ignited and immediately broken up and thrown outwardly laterally, by said ignition/bursting composition for rapid wide spread smoke production, a further smoke charge which is compact and hence burns more slowly than the first said smoke charges and which is positioned ahead of the first said smoke charges taken in the direction of travel of the grenade, and further ignition means positioned to ignite the further smoke charge, a further delay means, said further ignition means being ignitable by said ignition/bursting composition via said further delay means, after a pre-determined delay, for igniting said further smoke charge.

4,353,302

ARRANGEMENT IN OR RELATING TO A PROJECTILE

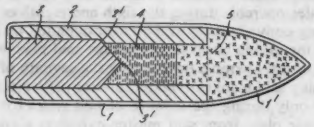
Kaare R. Strandli, and Arne M. Östlie, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Continuation of Ser. No. 957,851, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 779,994, Mar. 22, 1977, abandoned. This application May 6, 1980, Ser. No. 147,051

Claims priority, application Norway, Jul. 1, 1976, 762297

Int. Cl.³ F42B *11/24, 13/14*

U.S. Cl. 102—364 **12 Claims**



1. A multi-capability projectile providing substantially splinter, fragmentation and incendiary effect after penetration of a target wall of a predetermined thickness in combination with substantial armor piercing properties, comprising a primary penetration element and a secondary penetration element, said primary penetration element being located toward the rear of the projectile and surrounded over its full length by said secondary penetration element such that said primary penetration element is disposed completely inside said secondary penetration element, the secondary penetration element being substantially longer than said primary penetration element and extending substantially beyond said primary penetration element toward the front of the projectile so as to define a cavity in the secondary penetration element forward of the primary penetration element, the secondary penetration element terminating at its forward end rearward of the front end of the projectile, bursting charge means located in said cavity no farther forward than the front end of the secondary penetration element, means defining a nose at the forward end of the projectile, forward of the secondary penetration element, an incendiary charge located in said nose for igniting upon deformation of the nose upon impacting a target, and hence for igniting said bursting charge, said nose being substantially completely filled with said incendiary charge, and hence being devoid of mechanical fuses or firing pins, said incendiary charge being constructed to burn at at rate which will delay detonation of the bursting charge until the bursting charge and its surrounding portion of the secondary penetration element have essentially passed through said wall, whereby detonation of the bursting charge, and hence splintering and fragmentation of the secondary penetration element occurs past said wall, and retaining means located forward of the rear end of the secondary penetration element for retaining said primary penetration element substantially immobile relative to said secondary penetration element prior to impact of the projectile with a target, said retaining means including a projecting surface which projects inwardly from said secondary penetration element to securely engage the primary penetration element.

4,353,303

PROJECTILE FOR DISPENSING GASEOUS MATERIAL

Frank H. Bell, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 888,120, Mar. 20, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,359

Int. Cl.³ F42B *13/46*

U.S. Cl. 102—367 **3 Claims**

1. A projectile for dispensing gaseous material to the external environment, comprising:

a closed, hollow, cylindrical housing having an opening in its forward end;

a central venturi tube inside the housing, fastened to the

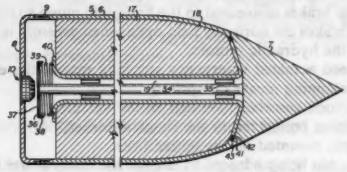
forward end thereof to encompass said opening and extending aftwardly therefrom, the aft end of said tube being in communication with the interior of the housing;

a nose cone forming at lease a portion of an aerodynamic, forward surface for the projectile but being separable from the forward end of the housing, against which it is normally seated;

a long rod centrally fixed at one end to the nose cone and extending centrally through the venturi tube;

spider supports in the venturi tube to support the rod for sliding motion therein;

a perforated disk centrally fixed to the aft end of the rod and having a short, forwardly extending, peripheral flange;



a compression spring confined between the aft end of the venturi tube and the perforated disk, being seated in a groove in the former and being retained by the peripheral flange on the latter, whereby the nose cone can function as a valving member against the venturi tube for controlled discharge of gaseous material when sufficient pressure occurs therein;

gaseous material to be dispensed to the external environment, stored in the space surrounding the venturi tube;

means for retaining the gaseous material in said space; and

means for releasing the gaseous material.

4,353,304

PROPELLANT CHARGE IGNITER

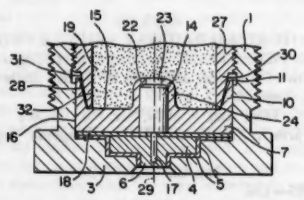
Günter Hübsch, Kalchreuth, and Rudolf Stahlmann, Fürth, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,618

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832879

Int. Cl.³ F42B *5/26, 9/26*

U.S. Cl. 102—470 **12 Claims**



1. A propellant charge igniter having a casing and positioned therein, in succession, a central contact member, an igniter element, and a powder charge, said igniter further comprising a sealing element surrounding the igniter element, said sealing element having, on a side contacting the powder charge, an annular collar in sealing contact with an inner wall of the casing and a holddown member arranged in the casing, said holddown member having an annular extension contacting the inner surface of the collar, the inner surface of the collar and an outer surface of the extension being inclined with respect to each other, at least in their contact zone, whereby axial pressure of the holddown member against the sealing element, the collar can be pressed radially against the inner wall of the casing; said holddown member being provided with a central bore in which the powder charge is retained in contact with said sealing element.

4,353,305

KINETIC-ENERGY PROJECTILE

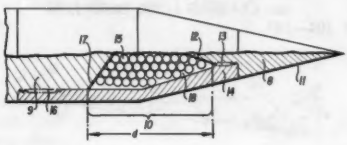
Pierre A. Moreau, Bourges, and Jean C. Sauvestre, Saint-Doulchard, both of France, assignors to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Nov. 23, 1979, Ser. No. 96,676

Claims priority, application France, Nov. 23, 1978, 78 33034

Int. Cl.³ F42B *11/12*

U.S. Cl. 102—519 **5 Claims**



1. A piercing kinetic-energy projectile, particularly of the arrow type applicable to light or heavy targets, comprising:

a heat penetrator;

a main penetrator;

a spacing means, said head and main penetrators being connected to said spacing means which retains a distance between the head and main penetrators and constitutes an envelope, said spacing means acting as a shock absorber to absorb the shock wave reflected by the target upon impact of said head penetrator, the ends of the main and head penetrators fastened in the envelope having a conical shape; and

a plurality of dense material sub-projectiles located in a space bounded by said spacing means and the ends of the main and head penetrators.

4,353,306

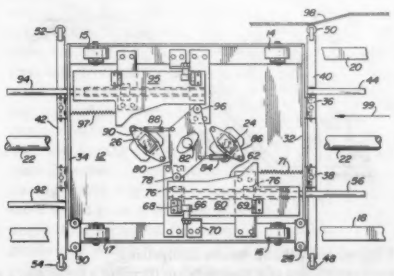
DRIVERLESS VEHICLE WITH TWO WAY ACCUMULATION

Peter H. Rohrbach, Bethlehem, and Robert A. Hale, Easton, both of Pa., assignors to Si Handling Systems, Inc., Easton, Pa.

Filed Jun. 19, 1980, Ser. No. 160,802

Int. Cl.³ B61B *13/12*

U.S. Cl. 104—166 **11 Claims**



1. A driverless vehicle capable of being driven in opposite directions comprising:

(a) a frame having front and rear ends and at least one drive wheel movable from a drive position to an accumulation position;

(b) first and second accumulators for moving said drive

wheel to said accumulation position, each actuator being adjacent one of the front and rear ends of the frame; and

(c) means for enabling said vehicle to be propelled in opposite directions with only one of the actuators being operable at any given time and so that said actuators are alternately movable between an operative and inoperative position depending upon the direction of movement of the vehicle wherein one of the actuators is operable to cause accumulation upon contact with an obstacle.

4,353,307

TOWING DEVICE FOR USE IN THE SURF

Bruce H. Munson, 334 Emerson Cir., Corpus Christi, Tex. 78415

Filed Mar. 28, 1980, Ser. No. 135,106

Int. Cl.³ B61B *11/00*; B66D *1/36*

U.S. Cl. 104—183 **7 Claims**

1. Apparatus for towing individuals from adjacent a shore out into an adjacent body of water, comprising

an anchor in the body of water;

a buoyant member connected to the anchor having a pulley thereon adjacent the surface of the water;

an endless flexible line reeved about the pulley and having two runs extending from the buoyant member to a location adjacent the shore;

means for endlessly moving the flexible line to drive one of the runs in a direction away from the location; and

means operable from adjacent the shore for moving the buoyant member, pulley and flexible line from adjacent the anchor to adjacent the shore, the buoyant member moving means comprising first means carried by the anchor, a second endless line extending from adjacent the shore and reeved in the first means, and means adjacent the shore for anchoring the second line.

4,353,308

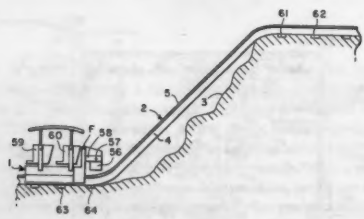
COG WHEEL RAILWAY

Kenneth G. Brown, Wickham Ave., Mattituck, N.Y. 11952

Filed Jul. 14, 1980, Ser. No. 167,929

Int. Cl.³ B61B *13/02, 13/06*; B61C *11/04*; B61H *7/00*

U.S. Cl. 105—29 R **10 Claims**



1. Cog wheel vehicle means comprising:

a track consisting of a square beam forming a tread and a pair of exterior flanges connected to the beam extending the tread laterally,

a row of holes in each flange,

a vehicle adapted to ride on said track, an axle, a pair of cogs on a wheel on said axle, the cogs engaging the holes in the flange,

means connected to said axle to drive the cog wheel,

an engine pivotally mounted on the vehicle, the engine being connected to the axle to drive the cog wheel driving means.

9. Cog wheel vehicle means comprising:

a track consisting of a square beam and a pair of flanges connected to the beam,

a row of holes in each flange,

a vehicle adapted to ride on said track, at least one cog wheel on the vehicle, the cog wheel engaging the holes in the flange,

a directional hydraulic motor connected to drive the cog wheel,

a hydraulic pump connected to drive the motor,

an engine pivotally mounted on the vehicle, the engine being connected to drive the pump,

disc brakes connected to the hydraulic pump so that the disc brakes are normally held open when pressure is applied to the hydraulic motors,

speed actuated emergency stopping means, the emergency stopping means comprising

a shock absorber mounted on the vehicle,

a lever connected to the shock absorber,

a pin mounted on the lever,

the pin being adapted to engage the holes in the flanges,

a latch mounted on the vehicle and connected to hold the lever,

a centrifugally operated member mounted on a wheel shaft of the vehicle connected to trip the latch at a pre-determined speed.

10. Cog wheel vehicle means comprising:

a track consisting of a square beam and a pair of flanges connected to the beam,

a row of holes in each flange,

a vehicle adapted to ride on said track, at least one cog wheel on the vehicle, the cog wheel engaging the holes in the flange, hand operated brake means on the vehicle comprising:

a C clamp frame slidably mounted on the vehicle for transverse motion, the jaws of the C clamp frame extending into gripping proximity to the sides of the square beam,

a first brake shoe fixed to the C clamp frame,

a second brake shoe mounted on the C clamp frame,

a second brake shoe mounted on a threaded shaft, the said shaft being threadedly mounted in the hub of the C clamp on the frame,

and a handwheel connected to rotate the threaded shaft to tighten the brake shoes against the sides of the square beam.

4,353,309

MOTORIZED RAILWAY VEHICLE TRUCK

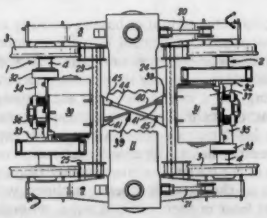
Maurice G. Pollard, Mickleover, and Robert Illingworth, Allestree, both of England, assignors to British Railways Board, London, England

Filed Aug. 8, 1980, Ser. No. 176,361

Claims priority, application United Kingdom, Sep. 6, 1979, 7930895

Int. Cl.³ B61C *9/50*

U.S. Cl. 105—136 **4 Claims**



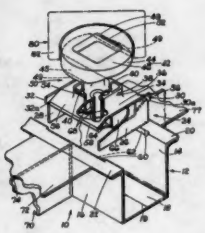
1. A railway vehicle truck comprising:

a pair of side frames;
at least two wheel sets each having a live axle mounted in a respective pair of axle bearings;
a traction motor for each wheel set comprising a motor casing mounted for rotation on said associated live axle via a mounting means which otherwise maintains the motor casing rigid with and substantially parallel to said associated live axle;
means for securing each motor casing to prevent rotation of said motor casing about its said associated live axle;
and bracing means comprising at least one link member connected between said motor casings on the respective wheel sets and being pivotably resiliently mounted for rotation about at least one vertical axis positioned directly between said casings, said bracing means providing a stiffness through said motor casings to restrain parallel shear movement of one of said wheel sets relative to the other in a substantially horizontal plane.

4,353,310
CUSHIONED RAILWAY CAR CENTER PLATE ASSEMBLY

Steven L. Jantzen, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,145
Int. Cl.³ B61F *3/00*
U.S. Cl. 105—199 C **15 Claims**



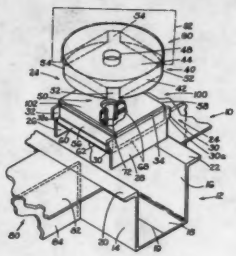
1. A railway car center plate assembly comprising: a center filler assembly adopted to be inserted into a railway car center sill and permanently attached to the center sill; said center filler including a pair of longitudinally spaced vertical plates which extend between vertical walls of the center sill and which are welded thereto; spacer extensions located below said vertical plates which extend beyond the walls of the center sill and abut the bottom surface of outwardly extending horizontal center sill flanges; a mounting plate extending longitudinally of the center sill between said center filler vertical plates; a mounting extension portion extending downwardly from said mounting plate having a non-round contour adopted to engaged a cooperating non-round opening located in a wear member to be located in the truck bowl; and interengaging means provided on said mounting extension and on said wear member to removably lock the wear member in engagement with said mounting plate and said mounting plate extension.

4,353,311
RAILWAY CAR CENTER PLATE ASSEMBLY

Steven L. Jantzen, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,146
Int. Cl.³ B61F *3/00*
U.S. Cl. 105—199 C **12 Claims**

1. A railway car center plate assembly comprising: a center filler assembly adopted to be inserted into a railway car center sill and permanently attached to the center sill; said center filler assembly including longitudinally spaced vertical plates which extend between the walls of the center sill; spacer extensions located below said vertical plates which extend beyond the walls of the center sill and abut the bottom surface of the center sill flanges; a mounting plate extending longitudinally of the car between said vertical plates; a wear member adopted to

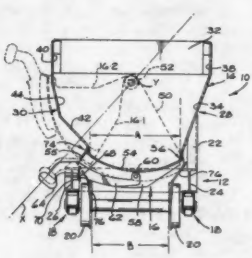


be located in the truck bowl; and interengaging means to removably lock said wear member in engagement with said mounting plate.

4,353,312
BOTTOM DISCHARGE HOPPER RAIL CAR

Cornelis Brouwer, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Transvaal Province, South Africa

Filed Feb. 22, 1980, Ser. No. 123,588
Int. Cl.³ B65G *67/24*
U.S. Cl. 105—241.2 **14 Claims**

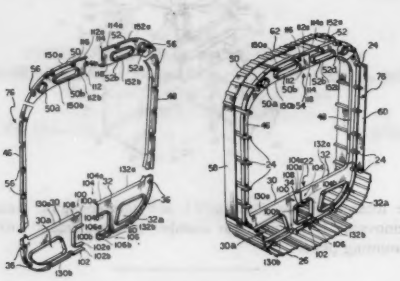


1. A bottom discharge hopper structure comprising:
a chassis which is supported on flanged wheels having rail-engaging surfaces for resting on spaced rails,
a hopper body mounted on the chassis and having a longitudinal central vertical plane, the hopper body comprising two longitudinally extending side walls and two transverse end walls, each side wall comprising at least a sloping wall which slopes inwardly towards the longitudinal central plane of the hopper body,
one of said sloping wall being at a lesser angle to the vertical than the other of said sloping walls, and said sloping walls having lower edges bordering a bottom opening which has a width greater than the distance between said wheels,
a single door mounted for swinging movement between a position in which it closes said opening and a position in which it is offset with respect to said opening to permit discharge from the hopper body, and
chute plates converging downwardly away from said opening, the chute plates each extending from a position which is located outwardly of a lower edge of a respective side wall to a position which is located inwardly of the rail-engaging surfaces of the wheels for guiding material being discharged from said hopper body between rails on which the wheels rest.

4,353,313
BODY FOR A RAILWAY CARRIAGE

Romano Panagin, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 25, 1980, Ser. No. 143,686
Claims priority, application Italy, May 24, 1979, 68111 A/79
Int. Cl.³ B61D *17/00*
U.S. Cl. 105—397 **1 Claim**



1. A railway carriage body comprising a shell structure formed from the following structural sub-assemblies;

a base sub-assembly comprising a series of transverse lower frame elements spaced longitudinally of said body and each constituted by a respective pair of sheet-metal frame parts welded together, girders interconnecting the said lower frame elements, an outer sheet-metal covering fixed to said girders and to the lateral and lower edges of the said lower frame elements, and a flooring fixed to the upper edges of the said lower frame elements,

a pair of side-and-roof sub-assemblies each forming one side and part of the roof of the said body and comprising a series of vertically-extending lateral frame elements connected at their lower ends to the said lower frame elements, and a series of upper transverse frame parts connected to the upper ends of respective ones of said vertical frame elements, corresponding said frame parts of the two side-and-roof sub-assemblies being welded together in the assembled body to form a series of upper transverse frame elements together with the said lateral and lower frame elements form a series of frames of rectangular shape, each side-and-roof subassembly further comprising a plurality of girders extending longitudinally of said body and serving to interconnect the said frame elements of the sub-assembly, and an outer sheet-metal covering affixed to said frame elements and girders and provided with strengthening frames defining window and door openings,

a pair of end-wall units affixed to opposite ends of the said sub-assemblies, the said frame parts making up each upper and each lower frame element having their inner end portions, considered laterally of the body, telescoped one within the other to permit adjustment of the width of said carriage body during assembly prior to being permanently joined together, and

means for permanently joining together the said frame parts making up each upper and each lower frame element.

4,353,314
BOX CAR CORNER POST ARRANGEMENT

Roy W. Miller, Highland, Ind., and Bhaskara R. Mutyala, Birmingham, Ala., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 22, 1980, Ser. No. 180,262
Int. Cl.³ B61D *17/06*
U.S. Cl. 105—410 **4 Claims**

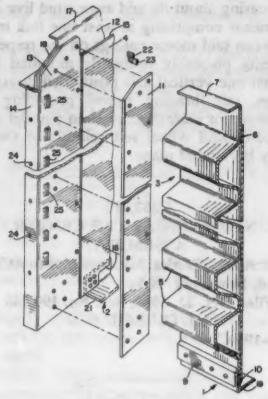
1. In a railway car having an end wall having a finite thickness and a side wall, a car corner construction comprising:

a corner post with means attached to an forming a continuation of said side wall;

a flat, vertically disposed reinforcing plate extending across the thickness of the end wall and sandwiched and affixed between the end wall and said corner post, and, said reinforcing plate having a first vertical edge;

means securely attaching the reinforcing plate to both the corner post and the end wall to provide a secure connection;

a side plate connected to the upper position of the side wall



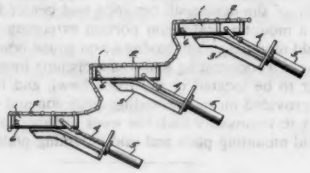
and further having end means connected to said reinforcing plate to thereby rigidly interconnect the side plate with the end wall;

said corner post having integrally formed means for alignment of the reinforcing plate and said integrally formed means being disposed adjacent said first vertical edge of the reinforcing plate to provide stop means to limit outward movement of said end wall.

4,353,315
STEP GRATE FOR MECHANICAL STOKER WITH FLEXIBLE FIRE GRATE

Katsurou Hayashi, Fujisawashi, Japan, assignor to Akihiko Hiroe, Fujisawa, Japan

Filed Jun. 12, 1980, Ser. No. 158,774
Claims priority, application Japan, Jun. 14, 1979, 54-075162
Int. Cl.³ F23H *7/08*
U.S. Cl. 110—281 **11 Claims**



1. A step grate mechanical stoker, comprising:

a flexible reticulate grate having an entrance margin and an exit margin, said grate being generally laid out so that material may be loaded onto the grate at the entrance margin and migrated across the grate to the exit margin;

a plurality of generally upright support structures arranged in at least one series;

said grate being draped upon said support structures so that said series is aligned with the entrance margin to exist margin dimension of said grate and said grate being constituted between adjacent twos of said support structures by a respective plurality of flexibly interconnected elements

so that said grate hangs in respective cantenaries in respective intervals between pairs of neighboring said support structures in said series.

each support structure including a grate contact member, a fixed portion, and an extensible/retractible portion between the contact member and fixed portion thereof;

means for extending and retracting each extensible/retractible portion.

4,353,316

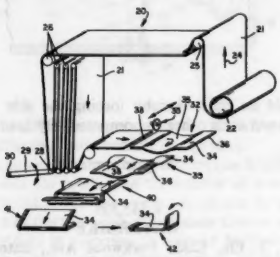
SHEET PRODUCTION SYSTEM WITH HEM EXPANDER

Charles E. Brocklehurst, Fountain Inn, S.C., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 956,792, Nov. 1, 1978, Pat. No. 4,269,130. This application May 27, 1980, Ser. No. 153,084

Int. Cl.³ D05B *97/00, 35/02, 21/00*

U.S. Cl. 112—262.3 **19 Claims**



1. A method of forming a hem in sheet material comprising the steps of folding an edge portion of the sheet material into overlying relationship with the body of the sheet material, holding the edge portion from movement in a direction across its length, positively moving the body of the sheet material toward the fold in the sheet material, directing a flow of fluid toward the fold between the layer of the folded edge portion and the layer of the body of the sheet material to expand the folded portion of the sheet material, and sewing through the folded portion and the body portion of the sheet material to form a hem.

15. A method of forming a hem in the edge of a segment of sheet material comprising moving the segment along a path with the edge portion to be hemmed extending along the path, folding the edge portion upwardly into overlying relationship with the body portion of the segment, simultaneously moving the folded over portion with an upper belt member toward a sewing machine and moving the body portion of the segment beneath the folded over portion with a lower belt member toward the sewing machine, and in response to detection of an on-coming edge of the segment approaching the sewing machine shifting the phase of one of the belt members to change the position of the on-coming edge of the body portion of the segment beneath the folded over portion with the on-coming edge of the folded over portion, and sewing through the overlying folded over portion and the body portion of the segment beneath the folded over portion.

4,353,317

METHOD AND APPARATUS FOR TUFTING HIGH AND LOW PILE IN THE SAME ROW OF STITCHING

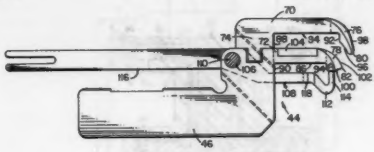
Robert T. Crumbliss, Chattanooga, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Feb. 4, 1982, Ser. No. 345,929

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—266.2 **9 Claims**

6. A method of tufting cut pile having different pile heights in the same row of stitching comprising, supporting and feeding a backing material in one direction, stitching a yarn continuously through said backing material as the material moves to form a row of successive yarn loops on one side of said material, supporting on said one side of said material an oscillating hook having first and second free ends pointing in the direction opposite the backing material feed and having a respective first and second blade portion adjacent each free end, said second free end being below the first free end at a level for entering and seizing said loops in succession, closing said second free



end with a moveable gate to prevent entry of a selected loop onto the second blade portion, sheding said selected loop from the second free end, seizing said selected loop by the first free end, moving the gate away from the second free end to permit entry of another selected loop onto the second blade portion and severing the loops on the first and second blade portions to produce cut pile.

4,353,318

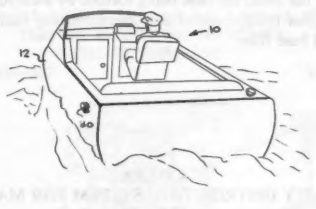
SPRAY GUARD

Milton J. Williams, Richmond, Va., assignor to Spray Guard Corporation, Richmond, Va.

Filed Oct. 16, 1980, Ser. No. 197,684

Int. Cl.³ B63J *2/00*

U.S. Cl. 114—211 **10 Claims**



1. A spray guard for preventing the entry of spray into the vent head on the end of a fuel vent line of a boat comprising a unitary member having a forward end and a rearward end and including an inner wall having a planar hull engaging surface and a rear edge, an outer wall spaced from the inner wall and transverse wall means extending between and connecting the inner wall to the outer wall to define a chamber of sufficient size to receive and enclose a vent head on the end of a vent line, a rearwardly facing opening in said chamber, a mounting slot having linear side edges extending inwardly from the rear edge of the inner wall and being of sufficient width to permit the vent line to extend therethrough but being of less width than the vent head to permit the vent head to clampingly engage the inner wall between the vent head and the hull of a boat so that the planar hull engaging surface is clamped against the hull to hold the spray guard in position permitting venting through the rearwardly facing opening while precluding contact of spray resultant from operation of the boat with the vent head so as to prevent the entry of such spray into the vent head and vent line.

4,353,319

MARINE BOLLARD MADE OF LAYERED PLASTICS RESIN AND GLASS REINFORCEMENT

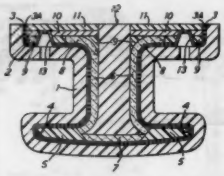
William J. M. Ash, The Croft, 10 Greville Park Rd., Ashtead, Surrey, England

Filed Aug. 6, 1980, Ser. No. 175,805

Claims priority, application United Kingdom, Feb. 26, 1980, 8006358

Int. Cl.³ B63B *21/06*

U.S. Cl. 114—218 6 Claims



1. A marine bollard for use by shipping, comprising a base supporting a column neck which carries a head with overlying portions projecting laterally outwardly above the neck, the outer surface thereof being formed from a coat of thermosetting plastics resin, said coat overlying lamination formed of glass reinforcement and thermosetting plastics material, the glass reinforcement of the laminations defining the overlying head portions being formed from bi-directional rovings, the glass reinforcement of the laminations defining the remainder of the head and the column neck being linear rovings arranged for curvilinear transitions from the column neck to both the head and the base, the base having a base filler formed of laminar material, the overlying portions of the bollard head being filled with a cured combination of thermoplastics resin and a compatible filler, the remaining area of the head and the neck walls of the bollard being formed of a cured combination of linear roving and chopped strand mat glass reinforcement and thermo-setting plastics resin, said walls defining a column cavity in the neck, the base being formed by a cured combination of glass reinforcement and thermosetting resin together with said base filler.

4,353,320

UTILITY DISTRIBUTION SYSTEM FOR MARINE FLOATS

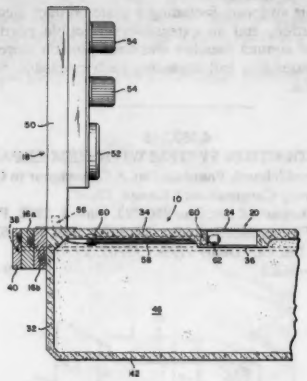
Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Apr. 7, 1980, Ser. No. 137,594

Int. Cl.³ B63B *35/38*

U.S. Cl. 114—267 12 Claims

1. A marine float, comprising a concrete casing surrounding a buoyant core, said casing having a bottom, two opposed end walls, two opposed side walls connecting opposite edges of said end walls and a generally planar deck extending between the upper edges of said end and side walls, said deck having formed therein a longitudinal utility trench having a bottom connecting the lower edges of two trench walls, said trench extending between said end walls to facilitate the routing of utility conduits along said float, said deck also having formed therein a transverse utility passage extending generally perpendicularly from said longitudinal utility trench and opening upwardly in said deck adjacent one side thereof to facilitate the routing of utility conduits to utility outlets mounted adjacent the side walls of the casing, said casing further including a plurality of spaced-apart, generally parallel tie rods extending between said side walls beneath the bottom of said trench, and respective fasteners secured to the ends of said tie rods to



tension said tie rods, thereby forcing the side walls of said casing toward each other to compressively load said casing.

4,353,321

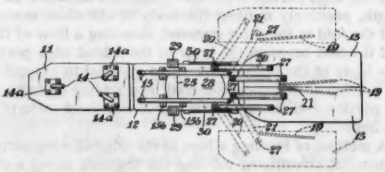
WATERBIKE

Gordon Y. T. Liu, 12336 Parkwood Ave., Baton Rouge, La. 70815

Filed Jun. 9, 1980, Ser. No. 157,508

Int. Cl.³ B63B *1/20*

U.S. Cl. 114—283 3 Claims



1. A waterbike, comprising: a first floatation member, including steering means; a second floatation member, including support means for a rider, said support means rigidly connected to the second floatation member in a fixed relationship, said second floatation member located aft along the horizontal axis of the waterbike and connected to the first floatation member; a third and a fourth flotation member means for varying the horizontal position of the third and fourth floatation members relative to one another and perpendicular to the horizontal axis of the waterbike, said position-varying means including a cable assembly, whereby the third and fourth floatation members are in a closed juxtaposed position when the waterbike is traveling at a relatively high speed and are disposed away from each other in a stabilizing position substantially perpendicular to the horizontal axis of the waterbike to provide vertical stability when the waterbike is stationary or traveling at a relatively low speed, said third and fourth floatation members further including vertically-positioned fins fixed to the bottoms thereof, said fins extending in a biased position along the bottom of the third and fourth floatation members relative to the horizontal axis of the waterbike, whereby the third and fourth floatation members are forced by the water pressure into a juxtaposed position as the speed of the waterbike is increased.

4,353,322

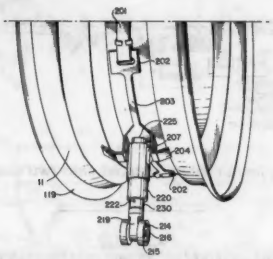
LOW INFLATION WARNING DEVICE FOR PNEUMATIC TIRES

Walter Weglin, Bellevue, and James M. Daly, Kirkland, both of Wash., assignors to Rockcor, Inc., Redmond, Wash.

Continuation of Ser. No. 59,720, Jul. 23, 1979, abandoned. This application May 4, 1981, Ser. No. 260,478

Int. Cl.³ B60C *23/06*

U.S. Cl. 116—34 B 6 Claims



1. A low tire inflation warning device for attachment to a wheel of an inflatable tired vehicle comprising:

tire contacting means comprising at least one wheel which is free to rotate for contacting the interior of a tire;

means connected to said tire contacting means for permitting movement of the tire contacting means toward said wheel of said vehicle in response to contact between said tire contacting means and the inner surface of the tire, said means for permitting movement comprising energy storage means operatively associated with said tire contacting means for storing a portion of the energy generated by movement of said tire contacting means toward said wheel of said vehicle;

sound generating means including striker means connected to said energy storage means for converting the energy stored therein into sound, thereby generating an audible signal in response to movement of said tire contacting means toward said wheel of said vehicle; and

mounting means for mounting said sound generating means to said wheel of said vehicle.

4,353,323

APPARATUS FOR THE TREATING OF ARTICLES

Heinz Koblenzer, Filderstadt, Fed. Rep. of Germany, assignor to Langbein-Pfanhauser Werke AG, Neuss, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,600

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015524

Int. Cl.³ B05C *11/10*

U.S. Cl. 118—61 6 Claims

1. An apparatus for treating articles with a solvent comprising:

an upwardly open vessel having a bottom and adapted to receive liquid solvent therein;

a heater at said bottom for heating solvent in said vessel to vaporize same, said vessel having an upper wall portion above said solvent;

a condenser formed along said upper wall portion for condensing vapor of said solvent;

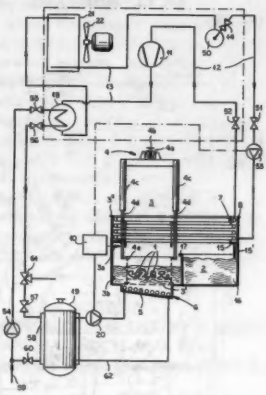
a heat pump having a circulating heat carrier and formed with a hot branch including a heat exchanger and a cold branch, said cold branch being connected to said condenser;

a water-containing heat storage tank and boiler adapted to be heated by said hot branch;

means for circulating a fluid for heating water for said tank through said heat exchanger;

means for feeding water from said tank to said heater;

means for lowering articles into said vessel and raising articles in said vessel for treatment of said articles with said solvent in said vessel; and



control means connected to said feeding means for controlling same in response to the raising and lowering of articles in said vessel and including means, effective upon raising of said articles in said vessel to operate said feeding means in an idling mode enabling convective movement of water through said heater from said tank.

4,353,324

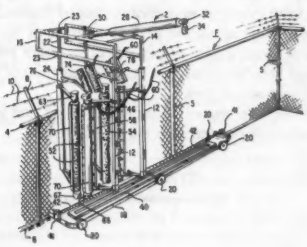
FENCE PAINTING APPARATUS

George Schnittker, 900 E. Roosevelt Rd., Lombard, Ill. 60148

Filed Jul. 25, 1980, Ser. No. 172,455

Int. Cl.³ B05C *1/08*

U.S. Cl. 118—207 14 Claims



1. Apparatus for applying a liquid coating to a substantially vertical surface comprising:

(a) a substantially U-shaped yoke inverted to straddle a fence or wall;

(b) means supporting said yoke on at least one side thereof for propelled movement adjacent a fence line;

(c) opposing liquid applicator means within sides of said yoke and adapted to act upon the respective opposite sides of said fence or wall; and

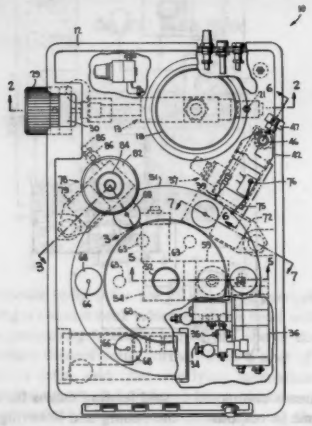
(d) means mounting said liquid applicator means within said yoke for free floating lateral movement to adjust for deviations in relation to the vertical surface.

4,353,325

SEALANT APPLYING APPARATUS

Dennis J. Argazzi, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Sep. 28, 1981, Ser. No. 306,351
Int. Cl.[3] B05B 13/02
U.S. Cl. 118—683 10 Claims



1. An apparatus for applying sealant to the threads of article such as fasteners, pipes, plugs, valves, etc. comprising:

rotatable means for moving a plurality of threaded fasteners along an arcuate path;

nozzle means adjacent said path for dispensing a coating of sealant on to threads of articles moved along said path;

said rotatable means comprising an indexable worktable having a plurality of fastener spindle assemblies radially spaced a predetermined distance apart and located adjacent the periphery thereof, said worktable being capable of intermittent stoppage of each of said assemblies at said nozzle mean;

means rotating each said spindle assembly about the central axis thereof when stopped at said nozzle means;

wiper means, positioned to wipe the article threads, comprising a wiper wheel adjacent said path and spaced from said nozzle means at said predetermined distance, a wiper pad positioned along the peripheral edge of said wheel; and

means rotating said wiper wheel to effect rotation of each said spindle about said central axis thereof when stopped at said wiper means;

whereby the coated threads are wiped and smoothened as sealant is pressed into the thread roots.

4,353,326

APPARATUS FOR THE STRIPPING OF THE INSIDE SEAM OF A CAN BODY MOVING AT A HIGH SPEED

James A. Kolibas, Cleveland, Ohio, assignor to Nordson Corporation, Amherst, Ohio

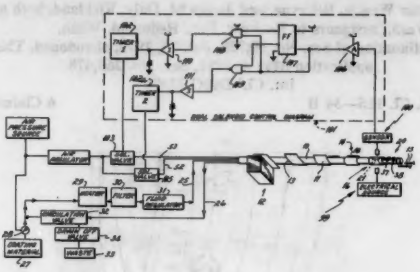
Filed Mar. 20, 1981, Ser. No. 245,939
Int. Cl.[3] B05B 12/04, 12/02; B05D 7/22, 1/02
U.S. Cl. 118—696 13 Claims

1. An apparatus for applying a coating material to the inside of can bodies moving along a can forming apparatus comprising:

a first pneumatically activated spray coating means; and

a second pneumatically activated spray coating means; and

means to alternately activate and deactivate said first and second spray coating means so that neither spray coating



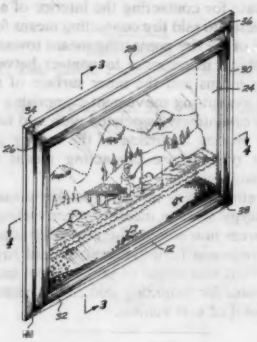
means applies a coating material onto two consecutive can bodies.

4,353,327

AQUARIUM/PICTURE COMBINATION

Ronald G. Shroyer, 16608 6th SW., Seattle, Wash. 98166

Filed Jun. 19, 1981, Ser. No. 275,381
Int. Cl.[3] A01K 63/00
U.S. Cl. 119—5 2 Claims



1. A picture presentation, comprising:

a three dimensional housing including a bottom wall, a top wall, a pair of end walls, and a rear wall, all together defining an interior, and an openable front for said housing including a transparent front wall through which the interior of the housing can be viewed;

means within said housing interior presenting a pictorial presentation, including a three dimensional portion which projects forwardly from the rear wall and includes a lower boundary that is spaced vertically above the bottom wall of the housing, so that a space is defined vertically between the bottom wall and the lower boundary of the three dimensional portion of the pictorial presentation, and horizontally between the two end walls, said space being of rectangular form;

an aquarium tank of rectangular form sized to fit snugly within said space, said aquarium tank being slidable into and outfrom said space from the front of the housing, said aquarium tank having a transparent vertical front wall which is closely adjacent the transparent front wall of the front closure when the aquarium is housed within said space, and said three dimensional portion overhanging said aquarium tank;

said pictorial presentation being of an above water scene;

said aquarium tank presenting a below water level pictorial presentation; and

said three dimensional portion of the pictorial presentation

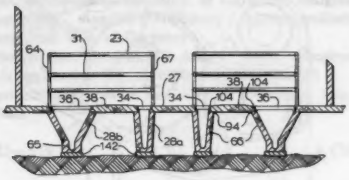
including a representation of a person in an act having an association with the below water pictorial presentation presented by the aquarium tank.

4,353,328

METHOD AND APPARATUS FOR CONSTRUCTING A SYSTEM OF GUTTERS FOR A SWINE BUILDING

Ronald L. Steidinger, Forrest, Ill., assignor to Forrest Redi-Mix Co., Forrest, Ill.

Filed Jun. 6, 1980, Ser. No. 157,198
Int. Cl.³ A01K *1/01*
U.S. Cl. 119—20 **7 Claims**



7. In a system of flush gutters for a swine building having an outer foundation wall, the combination comprising:

a plurality of concrete footings traversing said building forming rows and being sloped toward at least one side of said building,

a plurality of precast concrete gutter sections,

each of said sections comprising two longitudinal outwardly sloping side walls having two top walls spaced laterally apart and forming a trough therebetween,

said outwardly sloping walls having an inner surface forming said trough which is essentially free from surface roughness and is of a uniform smoothness,

said sections being abutted end to end forming rows and having a bottom surface resting on the top surface of said footings,

a low end of said gutter section row having a selectively operable drain therein,

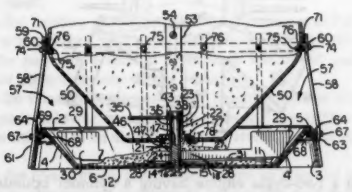
a plurality of precast concrete walkway sections abutted end to end and attached to said top walls of two gutter sections of adjacent gutter section rows, whereby waste material from swine in said swine building will fall into said gutters and will accumulate until said drain is opened causing said waste material to automatically flush from said gutter section rows.

4,353,329

ROTARY SELF-FEEDER

Ronald M. Thibault, Osborne, Kans., assignor to Osborne Industries, Inc., Osborne, Kans.

Filed Jul. 17, 1980, Ser. No. 169,797
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—52 A **12 Claims**



1. A self feeder mechanism for distributing feed to livestock comprising:

(a) a base member having a surface adapted to receive feed and a generally circular wall extending upward from said surface;

(b) a feed wheel being rotatable with respect to said base member surface and being adapted for engagement and movement by an animal; and

(c) said feed wheel including a radially extending spoke thereon; said spoke having a radially outward portion and a radially inward portion; said spoke outward portion having an upper surface extending above the entire length of the upper surface of said inner portion thereof; said spoke outward portion having a distal end being relatively closely spaced with respect to said circular wall;

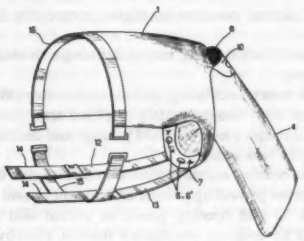
(d) whereby when the feed is positioned on said surface, the feed will be urged outwardly by rotation of said feed wheel until the feed reaches a sufficient level to spill over said spoke whereupon said feed will selectively spill over said spoke inner portion as opposed to said outer portion thereby urging such spilling feed radially inward.

4,353,330

POCKET BREECHES FOR USE BY A DOMESTIC ANIMAL SUCH AS A DOG

Andree G. Baumgartner, 66, rue de la Barre, 95880 Enghien Les Bains, France

Filed Aug. 15, 1980, Ser. No. 178,304
Claims priority, application France, Aug. 21, 1979, 79 21109; Apr. 16, 1980, 80 09478
Int. Cl.³ A01K *23/00*
U.S. Cl. 119—95 **6 Claims**



1. Breeches for use by a domestic animal such as a dog comprising, a back portion (1) covering at least partially the hindquarters and the upper part of the buttocks of the animal and, a rear part (2) coming back over the posterior of the animal and having a circular opening (3) from which extends a pocket (4) into which is introduced a plastic bag (5) which is removably fixed to the periphery of said opening (3), an aperture (8) being furthermore provided for passing the tail of the animal therethrough at the level of the connection between said back portion (1) and said rear part (2); and a belly element connected to the rear part (2) coming under the belly of the animal and which is connected by its free end to the front part of the back portion (1) by means of straps, characterized in that it comprises further in the peripheral edge surrounding said opening (3) of the rear part (2), fixing elements (6) cooperating with complementary fixing elements (6') mounted on a removable piece (7) provided with an opening of a size substantially equal to that of the opening (3) of said rear part (2), so that the free edge of the bag (5) introduced into the pocket (4) is sandwiched between said rear part (2) and said removable piece (7) and is nipped during mutual engagement of said fixing elements (6,6'); said plastic-material bag (5) comprising a cut-out (9) for passing the tail of the animal therethrough and in that, there is provided for improving the securing of the bag a yoke (10) fixed to the pocket (4) in the vicinity of the opening (8) intended for passing the tail therethrough, this yoke (10) being provided with at least one element (11) for removably fixing to the pocket (4), in the closed position, the edge of the bag (5)

adjacent the cut-out (9) provided for passing the tail therethrough.

4,353,331

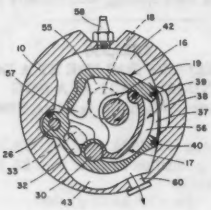
DUAL-EXPANSION INTERNAL COMBUSTION ENGINE UTILIZING AN OSCILLATING PISTON INSIDE AN OSCILLATING PISTON

Frederick L. Erickson, 2610 Bosworth Dr., Fort Wayne, Ind. 46805

Continuation of Ser. No. 28,713, Apr. 9, 1979, abandoned, Continuation of Ser. No. 180,135, Aug. 21, 1980, Pat. No. 4,325,331, each is a continuation-in-part of Ser. No. 959,795, Nov. 13, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,134

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—18 R **22 Claims**



16. An internal combustion engine comprising in combination

(a) engine block housing means defining a fluid-tight engine volume;

(b) first outer oscillating piston means formed as a base section with two oppositely disposed arms joined at their ends through a moving fluid passage and defining a cavity between said arms;

(c) pivot bearing means mounted in said engine block housing means providing pivotal attachment of said first piston means to said housing means to permit said first piston means to undergo oscillatory motion thereby to define within said engine volume two opposed outer fluid chambers of complementary variable volumes;

(d) second inner oscillating piston means within said cavity of said first piston means;

(e) pivot connecting means providing pivotal attachment of said second piston means to said first piston means to permit said second piston means to undergo oscillatory motion thereby to define within said cavity two opposed inner fluid chambers of complementary variable volumes;

(f) ignition means associated with a first of said chambers serving as a primary combustion/expansion chamber;

(g) first fluid porting means providing controlled fluid communication between said first of said chambers and a second of said chambers serving as a secondary expansion chamber;

(h) exhaust port means associated with a third of said chambers;

(i) second fluid porting means providing controlled fluid communication between said second and third chambers;

(j) combustible fluid supply means associated with a fourth of said chambers;

(k) third fluid porting means providing controlled fluid communication between said fourth and first chambers;

(l) power transfer shaft means rotatably supported in said housing means; and

(m) eccentric shaft means coupled to said power transfer shaft means for rotating with respect thereto and to said second piston means to coordinate movement of said first and second piston means.

4,353,332

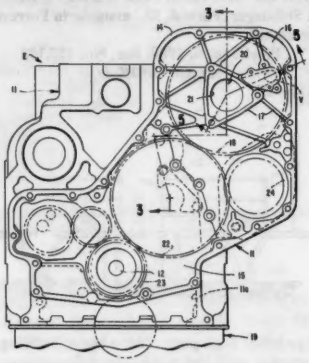
CRANKCASE VENTILATING SYSTEM

Roger D. Sweetland, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1980, Ser. No. 221,766

Int. Cl.³ F01M *13/02*

U.S. Cl. 123—41.86 **7 Claims**



1. A crankcase ventilating system for a multi-piston internal combustion engine, comprising an engine block provided with a plurality of piston cylinders, a crankcase and an upright housing disposed at one end of said block and spaced from the cylinders, said housing having a lower section communicating with the crankcase, an upper section provided with a vent to the exterior of the engine, and cover means removably mounted on said block end and overlying said upper and lower sections; a crankshaft mounted for rotation within said crankcase; drive means connected to said crankshaft and disposed within said housing lower section; and a vaned pressure-generating means rotatably mounted within said housing upper section and adjacent said vent, said vaned means being rotatably driven by said drive means and effecting a predetermined pressure buildup within said housing greater than the exterior pressure.

4,353,333

TWO CYCLE ENGINE WITH AUGMENTED INTAKE PORTS

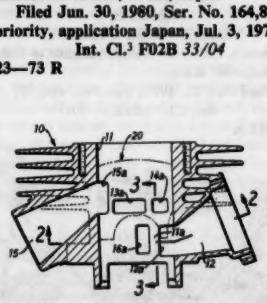
Toshimitsu Iio, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 30, 1980, Ser. No. 164,850

Claims priority, application Japan, Jul. 3, 1979, 54-84075

Int. Cl.³ F02B *33/04*

U.S. Cl. 123—73 R **4 Claims**



1. In a two-cycle engine having a cylinder bounded by a piston sliding wall, an intake passage, an exhaust passage, a scavenging passage, said passages opening into said cylinder through said piston sliding wall whereby to form a main intake port, an exhaust port, and a scavenging port, the improvement comprising: an auxiliary intake port opening through said

piston sliding wall and communicating with said intake passage, said auxiliary intake port being circumferentially spaced from said main intake port and said main intake port having a substantially greater circumferential extent than said auxiliary intake port, and said intake passage and said scavenging passage being independent from one another and non-communicating with one another, each opening into independent respective main and auxiliary intake ports and scavenging port.

4,353,334

METHOD OF AND APPARATUS FOR STARTING AN AIR-COMPRESSING FOUR-STROKE CYCLE INTERNAL COMBUSTION ENGINE

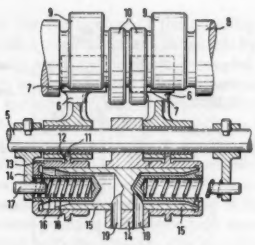
Alfred Neitz, Röthenbach, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 943,530, Aug. 17, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,791

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737601

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 H **4 Claims**



1. In an internal combustion engine having a crank shaft and an axially stationary cam shaft having cams thereon, the cam shaft being rotated by the crank shaft at one-half the speed of the crank shaft, and the engine further having spring-biased, normal-closed intake and exhaust valves opened periodically by rocker arms displaced periodically by the cams on the cam shaft, the improvement characterized by:

the cams being grouped in pairs on the cam shaft with the cams in each pair being axially juxtaposed with respect to one another and having single lobes which are circumferentially displaced from one another;

a single rocker arm positioned between each pair of cams and each of the valves, the single rocker arm having a cam follower surface of a sufficient width to engage simultaneously both cams in the pair;

means for rotatably mounting the rocker arm, wherein the rocker arm pivots to open the valve against the bias of the valve spring as the lobes engage the cam follower, said mounting means further including means allowing the rocker arm to slide in an axial direction with respect to the cam shaft;

means for limiting sliding motion of the rocker arm between a first position in which the cam follower abuts both cams of the pair and a second position in which the cam follower abuts only one of the cams;

means for biasing the rocker arm to the first position wherein the cam follower engages both cams and the engine functions initially as an air pump during starting of the engine, and

means for overcoming the biasing means to urge the rocker arm to the second position in which the cam follower engages only one cam wherein the engine runs as a four-cycle engine, said means for overcoming the biasing means operating automatically upon self-sustaining operation of the engine.

4,353,335

HAND STARTING MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

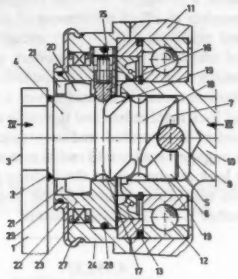
Willi Griesheimer, and Eduard Kukulak, both of Lampertheim, Fed. Rep. of Germany, assignors to Farymann Diesel GmbH, Lampertheim, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,462

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010727

Int. Cl.³ F02N *1/00*

U.S. Cl. 123—185 P **5 Claims**



1. Hand-starting mechanism for internal combustion engines with an axially displaceable starting shaft, with a starting handle fastened to the outer side of said starting shaft, with an one way dog coupling arranged at the inner frontal face of said starting shaft which couples the starting shaft and the shaft to be cranked during the starting procedure but separates these shafts when the internal combustion engine starts running, characterized in that, the starting shaft (4) is provided with an outer entrainment pin (20) which engages during the starting procedure one or more claw-like frontal recesses (21) on the inner rotary part (22) of a freewheel device (22,23,24) carrying with it in the inner rotary part relative to the outer stationary ring (24) of the freewheel device, whereas during kickback of the internal combustion engine the outer entrainment pin slides over one or more frontal ramps (25,26) of the recesses (21) of the then stationary inner rotary part (22) moving the starting shaft (4) in outward direction so that the one way dog coupling becomes disengaged.

4,353,336

FUEL PUMPING APPARATUS

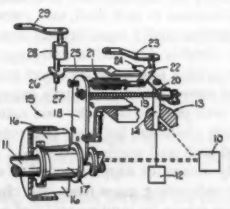
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 24, 1980, Ser. No. 209,602

Claims priority, application United Kingdom, Jan. 10, 1980, 8000846

Int. Cl.³ F02B *77/00*; B60R *25/04*

U.S. Cl. 123—198 B **4 Claims**



1. A fuel pumping apparatus for supplying fuel to a compression ignition internal combustion engine and comprising an

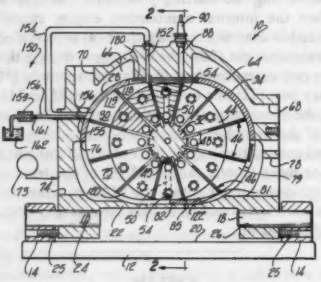
injection pump operable in use, in timed relationship with an associated engine, an angularly adjustable throttle member mounted in a housing of the appratus, the angular setting of said throttle member determining the amount of fuel supplied to the injection pump during a filling stroke thereof, a governor mechanism coupled to said throttle member, said governor mechanism including a manually movable member operable in use to vary the speed of the associated engine, a radial arm on said throttle member, a slide member movable into engagement with said radial arm to move the throttle member angularly to a closed position at which no fuel is supplied to the injection pump, a manually operable member engageable with said slide member to effect movement of the throttle member to the closed position, and a cover mounting said manually operable and manually movable members, said cover defining with the housing a space in which is located said slide member, a lock mechanism mounted on said cover, a radial arm projecting from said lock mechanism and movable angularly when the lock mechanism is operated and a projection on said slide member for engagement by said radial arm whereby the movement of the lock mechanism to the locking position will move and/or retain said slide member in the position in which the throttle member is in the closed position.

4,353,337

ROTARY ENGINE

Oscar E. Rossen, 51 Roslyn Rd., Grosse Pointe, Mich. 48236

Continuation-in-part of Ser. No. 828,299, Aug. 29, 1977, Pat. No. 4,202,313. This application May 2, 1980, Ser. No. 146,037
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—243 **13 Claims**



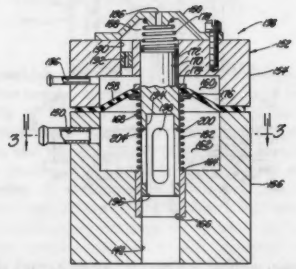
1. An internal combustion engine comprising:
a base,
a housing;
means for mounting said housing to said base,
a wall portion in said housing which forms an elliptical chamber;
a drive shaft and means for rotatably mounting said drive shaft to said base and transversely through said chamber;
a substantially cylindrical rotor disposed within said chamber and secured to said shaft, said rotor having a plurality of circumferentially equidistantly spaced vane members radially slidably disposed in said rotor;
means for urging said vane members radially outwardly so that said vane members sealingly engage selected sections of said wall portion whereby said rotor forms a plurality of arcuate chambers between said rotor, said vane members and said wall portion;
fuel supply means for supplying fuel to said chamber;
means for exhausting gases from said chamber;
fuel ignition means for igniting said fuel in one arcuate chamber at a predetermined position on said wall portion wherein at least one rotational position of said rotor, at least two vane members separate said last mentioned arcuate chamber from said fuel supply means and from said exhaust means;
wherein said housing mounting means further comprises means for slidably mounting said housing to said base along a predetermined linear path of travel, said path of travel being in a radial direction with respect to the axis of said drive shaft, and
wherein said housing mounting means comprises a pair of cylindrical support members secured to said base, the axes of said support members being parallel to each other and perpendicular to the axis of said drive shaft, and said housing having a pair of parallel and axially spaced bores, said cylindrical support members being slidably and pivotally positioned in said housing spaced bores.

4,353,338

ENGINE IDLE AIR VALVE MEANS AND SYSTEM

Russell J. Wakeman, Novi, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,502
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—339 **9 Claims**

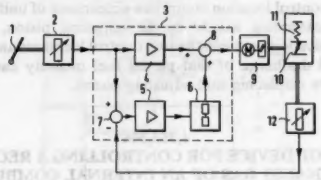


1. In combination with a combustion engine having induction passage means for the induction into said engine of motive fluid, fuel metering means for supplying metered rates of fuel flow to said induction passage means, throttle valve means for variably restricting the rate of flow of air through said induction passage means, and additional air valve means, said additional air valve means being effective to bypass said throttle valve means and supply a bypass-flow of air to said induction passage means downstream of said throttle valve means, said additional air valve means being pressure responsive, wherein engine vacuum within said induction passage means is transmitted to said additional air valve means for actuation thereof, said additional air valve means comprising first and second distinct but variable chambers, pressure responsive movable wall means situated generally between and separating said first and second chambers, movable valve means carried by said movable wall means for movement therewith, aperture means openable and closeable by movement of said movable valve means, first passage means operatively interconnecting said first chamber with said induction passage means as to thereby convey said engine vacuum from said induction passage means to said first chamber, second passage means operatively interconnecting said second chamber with a source of ambient air, and third passage means operatively interconnecting said aperture means with said induction passage means as to thereby convey as said bypass-flow such air as is obtained from said source of ambient air to said induction passage means, said movable valve means comprising first and second axially oppositely disposed ends, wherein the projected surface area of said first end is exposed to a source of ambient atmospheric pressure, and wherein the projected surface area of said second end is exposed to the pressure of said engine vacuum.

4,353,339
CONTROL OF THE TRAVELING SPEED OF A MOTOR VEHICLE

Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling A.G., Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,267
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852211
Int. Cl.³ F02D *11/16, 11/02*
U.S. Cl. 123—350 7 Claims



1. In a device for the control of the traveling speed of a motor vehicle with a control member actuatable by the vehicle driver, particularly a gas pedal, which is coupled with a first position encoder, an electric controller for the transmission of the adjustment movement of the control member to an element, which element influences a fuel-air mixture, by means of a regulating unit including an electric motor, the electric motor being in operative connection with the element and acting against the force of a return spring, which electric motor is supplied with a motor current which current is formed in the controller, a second position encoder, which second position encoder is coupled with the element, the second position encoder being arranged in a feedback circuit with inclusion of the controller, the improvement wherein

the feedback circuit constitutes means for varying the motor current and has a construction and sizing such that the motor current variation formed by the feedback circuit is limited to a value sufficient for correcting the greatest possible position error of the regulating unit,

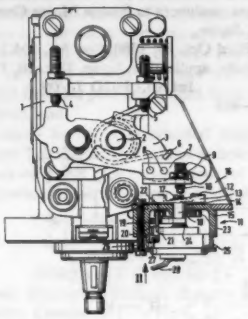
the sizing of the feedback circuit is such that the motor current variation which is caused by the second position encoder amounts to about 10 to 20% of the motor current controlled by the first position encoder.

4,353,340
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Max Straubel, Stuttgart; Karl Konrath, Ludwigsburg, and Gerhard Brink, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,788
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942493
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—365 3 Claims

1. A fuel injection pump for internal combustion engines, including a housing and having an arbitrarily actuatable lever for adjusting injection quantity moving through a lever path and an adjustable stop associated with said lever for determining the minimum injection quantity characterized in that said stop includes a rotatable cam disc displayed perpendicularly relative to the plane of said lever path and a bimetallic spiral for rotational adjustment of said cam disc relative to said stop, wherein

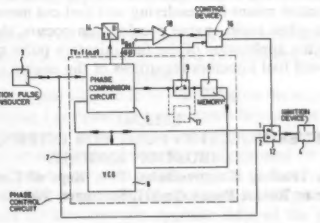


said stop further includes a spiral spring which serves to return said cam disc to a restoring position.

4,353,341
METHOD AND APPARATUS FOR VARYING THE SPACING OF IGNITION CONTROL PULSES EMITTED BY AN IGNITION PULSE TRANSDUCER

Manfred Henning, Kaarst, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,068
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949311
Int. Cl.³ F02D *5/04*
U.S. Cl. 123—414 10 Claims



1. A method for varying the spacings of sequential ignition control pulses of an actual ignition control pulse train emitted by an ignition pulse transducer, for controlling, along with a voltage-controlled oscillator, an ignition device, comprising the steps of:

generating an actual ignition control pulse train by the ignition pulse transducer;

generating a corrected ignition control pulse train of average frequency from the generated actual ignition control pulse train;

establishing a given phase difference between the corrected ignition control pulse train and the actual ignition control pulse train;

comparing the phase difference between the corrected ignition control pulse train and the actual ignition control pulse train; and

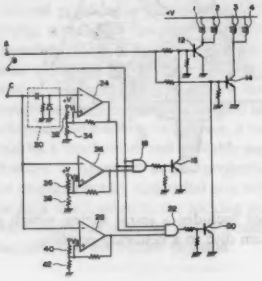
maintaining the most recent output of the voltage controlled oscillator when the given phase difference is not attained.

4,353,342

FUEL INJECTION CONTROL SYSTEM

Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 14, 1980, Ser. No. 196,334
Claims priority, application Japan, Dec. 10, 1979, 54-131539
Int. Cl.³ F02D 31/00
U.S. Cl. 123—493 3 Claims



1. A fuel injection control system for use with an internal combustion engine having fuel injectors, comprising:

(a) means for providing a fuel injection pulse signal (A) corresponding to the rate of air flow to said engine, thereby operating said fuel injectors;

(b) a signal generator for providing a first signal when the engine speed is above a first predetermined value and for providing a second signal when the engine speed is above a second predetermined value higher than said first predertermined value;

(c) fuel-cut means operable for cutting off the flow of the fuel injection pulse signal to some of said fuel injectors in response to said first signal during engine deceleration and for cutting off the flow of the fuel injection pulse signal to the remaining fuel injectors in response to said second signal during engine deceleration.

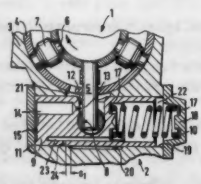
(d) control means for rendering said fuel-cut means inoperative when rapid engine deceleration occurs, thereby permitting application of the fuel injection pulse signal to all of said fuel injectors regardless of the engine speed.

4,353,343

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Dietrich Trachte, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 137,034
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918867
Int. Cl.³ F02M 59/20
U.S. Cl. 123—502 8 Claims



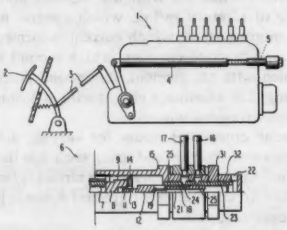
1. A fuel injection pump for internal combustion engines having a suction chamber and a control device for varying the onset of fuel supply counter to a restoring force by means of an adjusting piston displaceable in a work cylinder by means of fluid pressure, wherein said fluid pressure is controllable by a pressure control valve at least in accordance with rpm and by means of a throttled bore in said adjusting piston permitting a throttled discharge of a partial fuel quantity, characterized in that said adjusting piston and said working cylinder each are provided with annular wall surfaces, said adjusting piston is further provided with a first control location in the annular wall surface thereof, said first control location cooperates with a second control location in the annular wall surface of said working cylinder, one of said control locations is constantly exposed to a pressure relief chamber, the other of said control locations is constantly exposed to said fluid pressure, said second control location comprises a clearance of uniform cross section extending axially of the adjusting piston, whereby communication between the two control locations and thus the throttled discharge of said partial fuel quantity can be controlled by displacing said adjusting piston.

4,353,344

CONTROL DEVICE FOR CONTROLLING A RECYCLING OF EXHAUST GAS OF AN INTERNAL COMBUSTION ENGINE

Horst Bergmann, Esslingen, and Jörg Reddemann, Kernen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,801
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003885
Int. Cl.³ F02M 25/06
U.S. Cl. 123—569 20 Claims



1. A control device for controlling a recycling of exhaust gases into an intake system of a self-igniting internal combustion engine provided with a fuel injection pump means and a control rod means for controlling the fuel injection pump means, characterized in that the control device includes a signal generator means responsive to instantaneous conditions of the engine as a function of rotational speed and load on the engine as determined by a position of the control rod means, the signal generator means includes a control piston means for providing a pneumatic control signal to an adjusting member for each load condition of the engine associated with exactly defined positions of the control rod means so as to enable a regulation of an amount of exhaust gases recycled into the intake system of the engine in accordancewith an applied pressure of the control signal acting on the adjusting member.

4,353,345

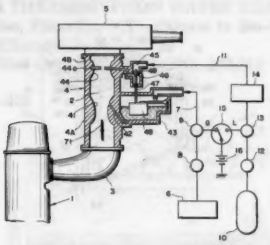
CARBURETOR

Sakae Ebihara, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Nov. 21, 1980, Ser. No. 209,188
Claims priority, application Japan, Nov. 22, 1979, 54-161095[U]
Int. Cl.³ F02B 7/00
U.S. Cl. 123—575 7 Claims

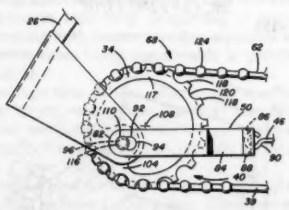
1. A carburetor for selectively mixing a first fuel and a second fuel with air, comprising:

an induction passage;
first means for mixing the first fuel with air within the induction passage;
second means for mixing the second fuel with air within the induction passage;
a first passage for feeding the first fuel to the first mixing means;
a second passage for feeding the second fuel to the second mixing means;
a float chamber in which the first fuel is held before the first



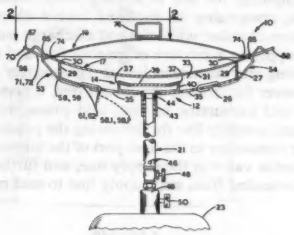
fuel is fed from the first passage into the first mixing means;
a float which floats on the first fuel within the float chamber;
means for detecting the volume of the first fuel within the float chamber; and
valve means for closing the second passage when the detecting means detects that the volume of the first fuel within the float chamber is above a predetermined value and for opening the second passage when the detecting means detects that the volume of the first fuel within the float chamber is below the predetermined value.

4,353,346
COMPOUND BOW
Alex J. Barna, 1216 Crawford St., Dunquesne, Pa. 15110
Continuation of Ser. No. 921,314, Jul. 3, 1978, Pat. No. 4,202,316. This application May 9, 1980, Ser. No. 148,208
Int. Cl.³ E41B *5/00*
U.S. Cl. 124—24 R **22 Claims**



10. A compound bow for propelling an arrow comprising,
handle means for gripping the bow,
a first flexible limb and a second flexible limb connected to opposite ends of said handle means, said first and second limbs each having a free end portion,
a first pulley and a second pulley,
said first and second pulleys each including sprockets on the periphery thereof,
mounting means for rotatably positioning said first and second pulleys on said free end portions of said first and second limbs respectively,
cable means extending between said limbs free end portions for flexing said pair of limbs to place said limbs in tension,
said cable means having a pair of end portions attached to said mounting means respectively and having portions reeved about said first and second pulleys to extend said cable between first and second pulleys and apply a preselected draw tension on said cable,
a plurality of engaging devices secured to said cable means and positioned in spaced relation on said portions of said cable means reeved about said first and second pulleys,
selected ones of said engaging devices being engageable with said sprockets of said first and second pulleys to position said free end portions of said limbs a preselected distance apart, and
said cable means having a preselected length extending between said first and second pulleys as determined by the distance between said free end portions of said limbs to apply a preselected draw tension to said cable means.

4,353,347
PORTABLE COOKER
Kenneth J. Seed, Vancouver, Canada, assignor to Barba Grill Inc., Vancouver, Canada
Filed May 15, 1979, Ser. No. 39,103
Int. Cl.³ A47J *37/00, 27/00*
U.S. Cl. 126—41 R **11 Claims**



1. A demountable cooker adapted to be connected to a pressurized combustible gas supply, the cooker having:
(a) a ventilated support having a base portion and a peripherally extending support rim disposed above the base portion,
(b) a burner fitted adjacent and generally centrally of the base portion, the burner having a gas delivery means for connection to the gas supply,
(c) a cooking pan adapted to be supported on the support rim and having a periphery which extends beyond the periphery of the rim when supported thereon, the pan being shaped so that, when the cooker is dismantled for storage the pan can be reversed on the support to form an enclosure with the support, the pan having a pair of pan handles disposed on diametrically opposite sides of the pan, the handles being adapted to extend outwardly for lifting the pan, and to be folded inwardly for storage,
(d) latch means adapted to cooperate with the pan and the support to latch the pan and the support together when dismantled, the latch means including a pair of support handles extending from the support to engage the periphery of the pan when the pan is reversed on the support, and to serve as handles when the cooker is disassembled for storage, the support handles also being adapted to cooperate with the pan handles to reduce movement between the pan and the support when the pan is supported on the support,
the support handles and pan handles being further characterized by:
(e) one of the pairs of handles is generally U-shaped,
(f) the remaining pair of handles is formed to fit within the U-shape of the first pair of handles so as to prevent relative rotation between the pan and the support when the cooker is assembled.

4,353,348

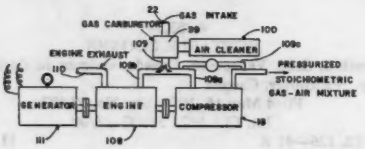
ENERGY CONVERSION SYSTEM

Robert B. Black, Corpus Christi, Tex.

Division of Ser. No. 813,667, Jul. 7, 1977, Pat. No. 4,197,831, which is a continuation of Ser. No. 620,327, Oct. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,094, Apr. 18, 1974, Pat. No. 4,025,291, which is a division of Ser. No. 192,262, Oct. 26, 1971, Pat. No. 3,844,270, said Ser. No. 620,327, is a continuation-in-part of Ser. No. 568,700, Apr. 16, 1975, abandoned, which is a continuation of Ser. No. 369,084, Jun. 11, 1973, abandoned. This application Dec. 19, 1979, Ser. No. 105,277

Int. Cl.³ F24C *3/00*

U.S. Cl. 126—91 R 1 Claim



1. Equipment for use in heating solid, liquid or gaseous materials, comprising an enclosed burner element having a combustion chamber with inlet and discharge ports, a carburetor for supplying a mixture of gaseous fuel and air, means for pressurizing said mixture including a pressurizer, a gas burning prime mover for driving the pressurizer, a manifold for connecting said carburetor to both said prime mover and said pressurizer, a supply line for delivering the pressurized mixture from the pressurizer to the inlet port of the burner element, and an adjustable valve in the supply line, and further including a by-pass extended from said supply line to said manifold.

4,353,349

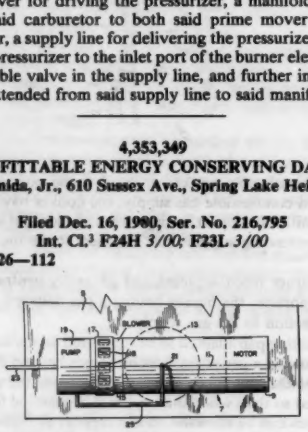
RETROFITTABLE ENERGY CONSERVING DAMPER

John Bormida, Jr., 610 Sussex Ave., Spring Lake Heights, N.J. 07762

Filed Dec. 16, 1980, Ser. No. 216,795

Int. Cl.³ F24H *3/00*; F23L *3/00*

U.S. Cl. 126—112 1 Claim



1. An energy conservation damper adapted for easy attachment to an oil burning furnace equipped with a combustion air blower which includes an air intake comprising an array of holes around a cylindrical frame, said damper comprising a sheet metal chamber of rectangular cross section, the broad sidewalls thereof having semicircular recesses therein and the narrow sidewalls having extended portions bent in a complimentary semicircle to form a circular recess adapted to be clamped over said array of holes so that said blower must obtain its supply of air through said chamber, the lower narrow sidewall of said chamber comprising a trap door type valve adapted to automatically open in response to the suction from operation of said blower and to automatically close upon de-energization of said blower, due to the force of gravity.

4,353,350

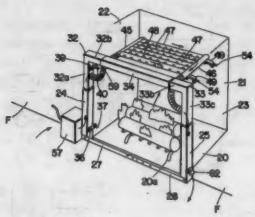
FIREPLACE HEAT EXCHANGER

Helmut Albrecht, 4954 Nettleton Rd., Medina, Ohio 44256

Filed Mar. 11, 1981, Ser. No. 242,464

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 10 Claims



1. In a fireplace heat exchanger of the character described, a spacer frame assembly adapted to provide a frame for surrounding the open front of a fireplace opening and a heat exchanger assembly in communication with said side frame assembly, said heat exchanger assembly comprising a pair of laterally-spaced horizontal manifold tubes, and a plurality of horizontally-extending parallel heat exchanger or convection tubes interconnecting said manifold tubes, said convection tubes having opposite sides thereof indented, with the indentations of each tube facing the indentations of adjacent tubes to thereby form substantially circular flues for the escape of smoke vertically therethrough.

4,353,351

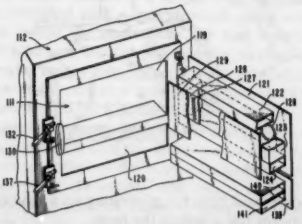
SOLID FUEL FURNACE

Bunyan B. Cagle, 1700 Towson Ave., Fort Smith, Ark. 72901

Division of Ser. No. 18,669, Mar. 8, 1979, Pat. No. 4,269,349, which is a continuation-in-part of Ser. No. 813,962, Jul. 8, 1977, Pat. No. 4,149,671. This application Feb. 17, 1981, Ser. No. 235,238

Int. Cl.³ F24C *15/02*

U.S. Cl. 126—193 4 Claims



1. A solid fuel furnace having a combustion chamber and a combustion door therefor,

a blow-back prevention device on the combustion door, said device including

a chamber within the door,

an outer facing for the chamber,

at least one aperture in said outer facing,

an inner facing for the chamber,

at least one aperture in the inner facing,

said apertures being not in alignment with each other,

a draft cover for the outer aperture,

said draft cover including a cover plate and a clamp,

said draft cover arranged so that the cover plate will move away from the aperture in the outer facing permitting air to pass through the apertures into the combustion chamber through the door chamber when the door is closed, and

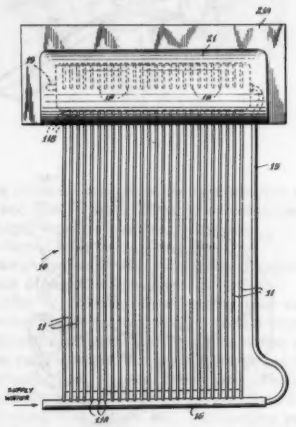
wherein said clamp is an articulated toggle with a handle which moves the cover plate against the aperture and which locks the combustion door in closed position.

4,353,352

SOLAR THERMOSYPHON WATER HEATER

Michael F. Zinn, Ellenville, N.Y., assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.

Filed Oct. 23, 1980, Ser. No. 200,262
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **6 Claims**



1. A solar thermosyphon water heater assembly adapted to be rolled up upon itself prior to installation comprising

(a) an inlet manifold into which supply water can be introduced;

(b) a solar absorber comprising at least one extended flexible elastomeric tube strip comprising a plurality of tubes alternating with interconnecting separable webs, all of the absorber tubes being connectable in parallel to the inlet manifold;

(c) a storage tank serving as an outlet manifold of substantially larger volume than the inlet manifold from which heated water can be withdrawn, all of the absorber tubes being connected in parallel directly to said storage tank; and

(d) a return pipe for connecting the storage tank and inlet manifold to form a closed-loop therebetween through the absorber.

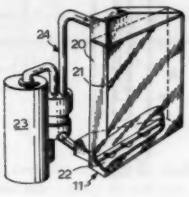
4,353,353

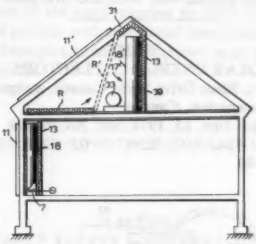
LOW TEMPERATURE SOLAR FURNACE AND METHOD

Robert R. Keller, Bedford, N.H., assignor to Keller Companies, Inc., Manchester, N.H.

Division of Ser. No. 49,736, Jun. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 949,267, Oct. 6, 1978, abandoned, which is a continuation of Ser. No. 579,560, May 21, 1975, abandoned. This application Jul. 8, 1980, Ser. No. 166,792
Int. Cl.³ F24J *3/02*; F28F *13/00*
U.S. Cl. 126—429 **14 Claims**

1. A method of substantially passive solar heating, that comprises providing an insulated enclosure operatively associated with a building, at least one side of the enclosure having a solar transmitting surface forming part of an outer wall of the building and the enclosure extending into the building a distance substantially in excess of the thickness of said outer wall, situating a heat sink within the enclosure spaced inwardly from the transmitting surface, the heat sink comprising a heat-absorbing medium occupying a significant volume of the enclosure, absorbing the heat of the solar energy entering the enclosure through said transmitting surface within said medium disposed within said insulated enclosure; simultaneously storing the absorbed heat in said medium; flowing air into said enclosure





to contact and exchange heat with said medium and to exit the heated air into the building to distribute heat therein, and controlling from within said enclosure the heat transfer characteristics between said enclosure and the outer environment through said transmitting surface, so as to increase the heat insulative properties of the enclosure at times when stored heat energy tends to flow from within the enclosure to the outer environment.

4,353,354

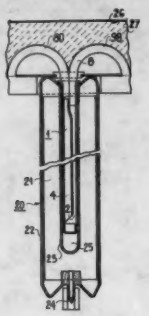
SOLAR ENERGY TRANSFER MEMBER FOR INTRODUCTION INTO AN ENVELOPE OF A SOLAR COLLECTOR

Louis Scoarnec, and Patrick Herbert, both of Paris, France, assignors to Compagnie des Lampes, France

Filed Dec. 4, 1979, Ser. No. 100,131
Claims priority, application France, Dec. 12, 1978, 78 34878
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **2 Claims**

1. A member for the transfer of solar energy by a heat transfer fluid, which is to be introduced into the hollow part of a solar collector envelope having a cross-section (SV) and which is to be connected upstream and downstream of said envelope to a general heat transfer fluid circuit, wherein it comprises a first tube of cross-section (S1) placed within the hollow portion and on the one hand a second tube of cross-section (S2) connected upstream to the general heat transfer fluid circuit and which itself penetrates the interior of said first tube, a hollow connecting plug sealing the end of the first tube and permitting the circulation of the heat transfer fluid between the inside of the second tube and the free cross-section (S1–S2) and on the other hand a third tube for ensuring the circulation of the fluid downstream of the member from said free section (S1–S2) to a general fluid circulation circuit, the second and

third tubes having in each case a flattened section over a given length l_1 such that when said two tubes are introduced into the



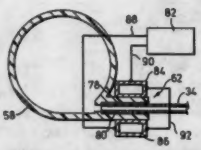
first tube the flattened sections are engaged and rendered integral with one another and with said first tube.

4,353,355

SOLAR ENERGY COLLECTORS

John M. Stewart, River Drive Park, Canada, assignor to Sunglo Solar Ltd., Downsview, Canada

Filed Nov. 13, 1979, Ser. No. 93,478
Int. Cl.³ F24J *3/02;* B29C *19/02;* B23K *13/02*
U.S. Cl. 126—445 7 Claims



1. A method of making a solar energy collector comprising the steps of:

forming a generally rectangular panel of a thermoplastic material, the panel having a plurality of fluid flow passageways extending longitudinally thereof;

forming a pair of elongate headers of a thermoplastic material, each header being of a length at least equal to the transverse dimension of the panel and including a main fluid flow passageway extending longitudinally of the header, and an elongate slot which also extends longitudinally of the header and which communicates with said fluid flow passageway, the slot being dimensioned to closely receive an end portion of the panel and having inner faces arranged for co-operation with opposed faces of said panel end portion;

providing on one of each of said opposed inner faces of the header slot and the panel a sealing strip which extends over at least substantially the entire length of the relevant face and which comprises a thermoplastic material capable of fusing with the material of said headers and panel, and having magnetically excitible particles dispersed therein;

assembling said panel and headers with said portions of the panel received in the slots in the headers;

subjecting said sealing strips to the effect of a high frequency magnetic field having characteristics selected to excite said particles in the sealing strips to an extent sufficient to cause said strips to fuse with said opposed faces on the panel and headers; and

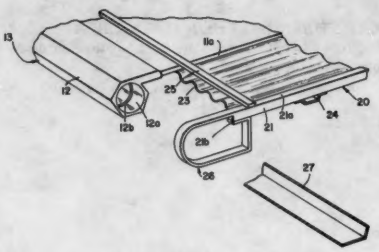
attaching suitable end fitments to the ends of each header.

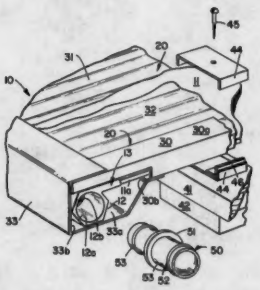
4,353,356

SOLAR COLLECTOR UNITS WITH MOUNTING FRAME

Benjamin E. Vandenbossche, Hillsborough, Calif., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed Jul. 3, 1979, Ser. No. 54,642
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 15 Claims





1. In combination, a solar collector, which includes a pair of lateral edges and a pair of longitudinal edges, and a mounting frame for said solar collector, said mounting frame including receiving means for resiliently receiving said longitudinal edges of said collector such that said collector is free to expand and contract laterally and longitudinally, supporting means underlying said collector for slideably supporting said collector intermediate said lateral edges and said longitudinal edges thereof, clamping means formed integrally with said receiving means for clamping one of said lateral edges of said collector such that said one lateral edge is fixed relative to said mounting frame while the other lateral edge is movable relative to said mounting frame, whereby any movement of said collector as a result of the longitudinal expansion or contraction thereof will occur at said other lateral edge.

14. A solar collector system, comprising a plurality of adjacent collector units, each collector unit including a collector, said collector having a pair of lateral edges and a pair of longitudinal edges, each of said lateral edges being delimited by a corresponding header, and mounting means for mounting said collector, said mounting means including receiving means for resiliently receiving said longitudinal edges of said collector such that said collector is free to expand and contract laterally and longitudinally, supporting means underlying said collector for slideably supporting said collector intermediate said lateral edges and said longitudinal edges thereof, clamping means formed integrally with said receiving means for clamping one of said lateral edges of said collector such that said one lateral edge is fixed relative to said mounting means while the other lateral edge is movable relative to said mounting means, whereby any movement of said collector as a result of the

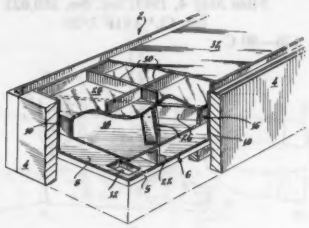
longitudinal expansion or contraction thereof will occur at said other lateral edge; and permitting means for permitting fluid communication between said headers of adjacent collector units without inhibiting relative movement between said collector units.

4,353,357

SOLAR COLLECTOR

H. Lee Nelson, 150 Clarence Rd., Scarsdale, N.Y. 10583

Filed Nov. 3, 1980, Ser. No. 203,435
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **12 Claims**



1. In a solar collector module of the type adapted to absorb solar energy and transfer heat energy to a fluid medium flowing therethrough, the improvement comprising:

a first pan-shaped solar energy absorber,

a second pan-shaped solar energy absorber received on the top surface of said first pan-shaped absorber,

a first plurality of downwardly-extending heat exchanger fins mounted to the bottom surface of said second pan-shaped absorber and arranged thereon to define a sinuous fluid flow path between the top surface of said first pan-shaped absorber and the bottom surface of said second pan-shaped absorber, one portion of said fluid flow path communicating with a fluid inlet and another portion of said fluid flow path communicating with a fluid outlet,

a second plurality of upwardly-extending heat exchanger fins mounted to the top surface of said second pan-shaped absorber, and

a first light-transmissive cover mounted above and supported thereon by said second plurality of upwardly-extending fins to define a first insulative dead air space between the top surface of said second pan-shaped absorber and said first cover, said second plurality of upwardly-extending fins being located within said first insulative dead air space,

whereby said first and second pan-shaped absorbers and said first and second plurality of fins provide increased absorber area, and said second plurality of fins in said first insulative dead air space impede air movement and turbulence to enhance the insulative effect of said first insulative dead air space.

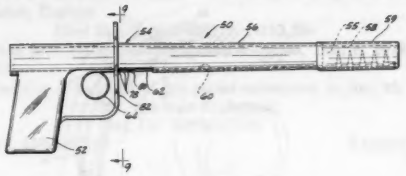
4,353,358

SIGMOIDOSCOPE

Reynolds L. Emerson, 116 Jefferson Rd., Webster Groves, Mo. 63119

Filed Aug. 28, 1980, Ser. No. 182,126
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **35 Claims**

1. A proctoscope comprising an elongated open ended tubular member of unitary construction having opposite first and second ends with adjacent end portions and a passageway extending between said first and second ends through the device, one of said end portions being constructed to be bendable primarily in one direction, a relatively stiff cord member having a first end connected to the tubular member adjacent to said first tube end, the cord member extending along the tubular member on the side thereof in which said one end portion is bendable to adjacent the second tube end, and operator means connected to the cord member adjacent to the second tube end, said operator means being movable between an inoperative position in which said one bendable tube end portion is substantially in alignment with the rest of the tubular member and an operative position whereby the cord member is pulled toward the second tube end and is moved longitudinally rela-



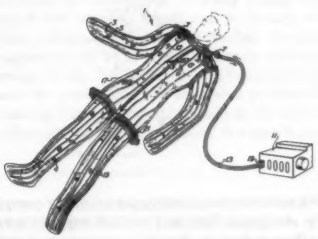
tive to the tubular member to pull on and deflect said one bendable end portion sidewardly in said one direction relative to the tubular member, said operator means and said tubular member including means that are engageable during longitudinal movement of the cord member to limit deflection of the bendable end portion such that visual examination can be made completely through said tubular member in all positions of the operator member.

4,353,359

PORTABLE JACKET FOR TREATMENT AND PROTECTION OF INJURED BODY MEMBERS

Nathaniel A. Milbauer, 177 Frederick Pl., Bergenfield, N.J. 07621

Filed Jul. 16, 1979, Ser. No. 57,952
Int. Cl.³ A61H *33/00*
U.S. Cl. 128—66 **18 Claims**

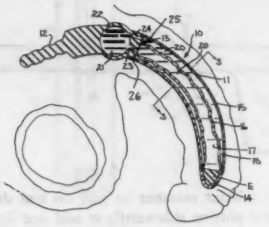


1. In the treatment of injured body members, a protective garment segment made of a flexible, water-resistant, plastic material which is skin compatible; said protective garment segment defining an elongated hollow cavity adapted to surround a body member inserted therein; said garment segment comprising a closed end and a limb-receiving sleeve end through which a body member can be inserted; said sleeve end comprising a garment-to-body sealing ring to permit a water-/air-tight seal between the garment segment and the body member inserted therein, flexible elastic plastic to permit accomodation of the sleeve to different-sized body members, and means for disconnecting said sealing ring and said elastic plastic from said sleeve end, thereby exposing a garment-to-garment sealing ring, designed to permit water/air-tight joinder of said garment segment to a second garment segment brought into contact therewith.

4,353,360
PENILE ERECTILE SYSTEM

Roy P. Finney, Tampa, Fla., and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corporation, Milwaukee, Wis.

Filed Oct. 31, 1980, Ser. No. 202,591
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—79 10 Claims

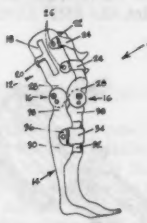


1. A penile erectile system comprising a penile implant including an inner chamber and a radially disposed outer chamber, the inner chamber being non-distensible so that when pressurized and filled with fluid it becomes rigid and the outer chamber having sufficient volume to accommodate enough fluid to fill and pressurize the inner chamber; a passage providing communication between said inner and outer chambers and means for retaining the transferred fluid from the outer chamber in the inner chamber to pressurize it and make it rigid.

4,353,361
ORTHOTIC/PROSTHETIC JOINT

Robert W. Foster, 16B Dayton Ct., Newington, Conn. 06111

Filed Aug. 25, 1980, Ser. No. 181,119
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—80 C 14 Claims

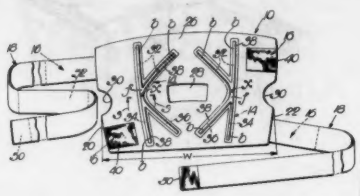


1. An orthotic/prosthetic joint assembly comprising longitudinally elongated first and second support members having generally overlapping laterally spaced apart end portions, an intermediate member disposed in the space between said end portions, first connecting means securing the end portion of said first support member to said intermediate member for pivotal movement relative to said intermediate member about a first axis in one direction from a first position of said first support member relative to said intermediate member, second connecting means securing the end portion of said second support member to said intermediate member for pivotal movement relative to said intermediate member about a second axis parallel to said first axis and in a direction opposite said one direction from a first position of said second support member relative to said intermediate member, said joint assembly having a position of normal extension wherein said first and second support members are generally longitudinally aligned with each other and said first and second axes are generally transversely spaced apart, first stop means disposed in said space between said end portion of said support members for preventing pivotal movement of said first support member in said opposite direction from its said first position, and second stop means disposed in said space between said end portions of said support members for preventing pivotal movement of said second support member in said one direction from its said first position, said first and second stop means being disposed between and substantially covered by said first and second end portions in all angular positions of said first and second support members relative to each other.

4,353,362
KNEE BRACES

Alexander H. DeMarco, 85 Maple Ave., Shelton, Conn. 06484

Filed May 4, 1981, Ser. No. 260,021
Int. Cl.[3] A61F 3/00
U.S. Cl. 128—80 C 1 Claim



1. A knee brace of unfolding type, providing a resilient pad having front and back faces and opposite sides and being of a width for partial envelopment of knees of different circumferences when applied thereto, and being of a given length for extension above and below a knee, two tapes extending from said pad and being of sufficient length for winding a plurality of times around said pad when in enveloping relation with a knee, said tapes have free ends and extend from lengthwise spaced parts of the opposite sides, respectively, two Velcro fasteners each having first and second companion parts on said front face of said pad along one side thereof and on an associated tape extending from the other associated pad side, respectively, with said companion fastener parts releasably interlocking when engaged with each othe, and each of said second fastener parts extending on the associated tape from the associated pad side outwardly sufficiently to be engageable with its companion fastener part on bridging the gap between the sides of the applied pad on a knee on wind-on of the tape for a fraction of one turn and said first fastener parts are arranged along said pad sides, respectively, and are aligned, widthwise of said pad, with the lengthwise spaced parts of the pad sides from which extend the tapes that carry the respective companion fastener parts so as to indicate wind-on of the tapes on the applied pad in opposite directions, and a further Velcro fastener on each tape having companion parts at, and so spaced from, the end of the tape to be engageable with each other on the last turn of the wind-on of the tape.

4,353,363
INTRAUTERINE SPERMICIDE

Angel Sopena Quesada, C/Chapineria, 6, Madrid 35, Spain

Continuation of Ser. No. 20,234, Mar. 13, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,670
Claims priority, application Spain, Nov. 23, 1978, 239.677
Int. Cl.[3] A61F 5/46
U.S. Cl. 128—130 2 Claims

1. An intrauterine spermicide comprising:

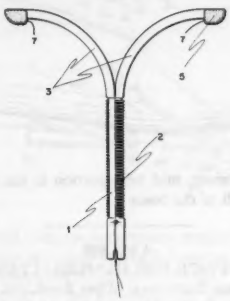
an elongated cylindrical support body adapted to be positioned within a uterine cavity;

said support body having extending from an end thereof two arms adapted, when said support body is positioned in the uterine cavity, to extend in the directions of the oviducts, each said arm having a semi-cylindrical cross-sectional configuration;

each said arm extending away from said support body in a

curved manner to form a configuration approximately corresponding to a quarter of the circumference of a circle, such that said two arms together form a curved V-shaped configuration extending away from said support body and adaptable without being rejected to a fallen uterus;

said support body having a reduced diameter portion forming an annular recess;



a copper wire wound as a spiral around said reduced diameter portion and acting as a spermicide;

the depth of said recess substantially corresponding to the thickness of said copper wire; and

each said arm having at the free end thereof a copper mass forming a spermicide for spermatozoa which have bypassed said copper wire.

4,353,364

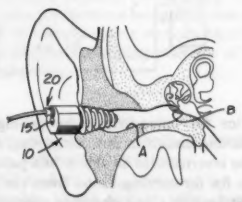
EAR ACOUSTICAL ATTENUATING DEVICE

Thomas J. Woods, 14124 Dickens St., Sherman Oaks, Calif. 91423

Continuation of Ser. No. 870,443, Jan. 18, 1979, abandoned. This application Apr. 10, 1980, Ser. No. 138,936

Int. Cl.³ A61F *11/02*

U.S. Cl. 128—152 **17 Claims**



1. An ear hearing protective device comprising:

an elastomer body means having a first aperture and a second aperture, said first and second apertures being laterally spaced apart and a connecting tubular means extending from said first and second apertures, said tubular means being tapered and adapted to be received in the ear canal of the human ear in a sound-sealing relationship;

an auditory channel for passing sound waves therethrough extending through said body means from said first aperture therein and through said tubular means to an opening at its distal end;

a sound attenuating means located in said channel operable to attenuate sound waves, said sound attenuating means having an opening of a lesser diameter than the said channel; and

a removable plug means selectively inserted in said first aperture communicating with said auditory channel in said body means or in said second aperture therein to provide the wearer with selective total sound occlusion and partial sound attenuating depending upon the position of said plug means in said apertures.

4,353,365

DEVICE FOR DISPENSING MEDICAMENTS

Gerald W. Hallworth, Ware, and David Clough, Bishop Stortford, both of England, assignors to Glaxo Group Limited, London, England

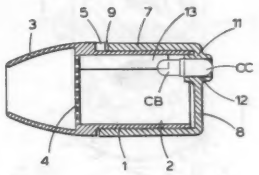
Filed Dec. 5, 1980, Ser. No. 213,309

Claims priority, application United Kingdom, Dec. 6, 1979, 7942208

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—203.15 **5 Claims**



1. An inhalation device by which powdered medicaments can be orally or nasally administered to a patient comprising a body shell defining a portion of a chamber which has a nozzle at a forward end and which is open at the rear end, a sleeve fitted on the outside of the body shell and rotatable with respect to it and having a rear wall closing the open rear end of the chamber, a capsule retaining means extending through the said rear wall of the sleeve into the chamber and having an external entry opening for a capsule at the rear of the sleeve, said capsule retaining means being sized to retain a capsule inserted therein with a portion of the capsule extending into said chamber, an abutment fixed inside the chamber in such a position with respect to the capsule retaining means that the capsule retained in the retaining means and projecting from it into the chamber will engage the abutment when the sleeve is rotated with respect to the body shell thereby to separate the projecting portion of the capsule from the remainder of the capsule, a guard for preventing the separated portion of the capsule from passing through the nozzle, and an air inlet opening extending through the said rear wall of the sleeve into the chamber.

4,353,366

CARBON DIOXIDE ABSORBER

Allan M. Bickford, 1581 Hubbard Rd., East Aurora, N.Y. 14052

Filed Jul. 23, 1980, Ser. No. 171,330

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.12 **14 Claims**

10. A carbon dioxide absorbing apparatus of the type adapted to be placed in flow communication with a patient face mask or the like through a pair of breathing tubes, said apparatus comprising:

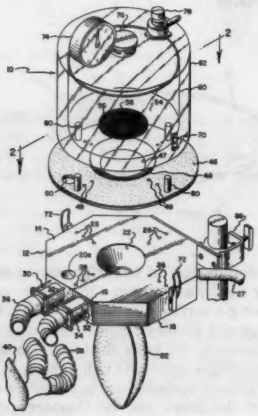
a base having an upper surface;

a pair of passage means extending within the base and having first and second ends, one of said second ends opening centrally through said upper surface and the other of said second ends opening through said upper surface in an offset relationship to said one of said second ends;

a cup-shaped cannister for retaining a charge of carbon dioxide absorbing material, said cannister having a side wall bounding an open upper end of said cannister and a bottom wall formed with a centrally located opening for permitting flow of gas through said cannister in contact

with said material, said bottom wall having screen means for constraining passage of said material downwardly through said centrally located opening thereof;

a gasket formed of resiliently deformable material mounted on said upper surface, said gasket having a centrally located opening arranged for alignment with said one of said second ends and an offset opening arranged for alignment with said other of said second ends, said gasket including an annular raised portion surrounding said centrally located opening thereof, said cannister being removably supported in fluid sealing engagement on said gasket with said bottom wall spaced outwardly of said upper surface and said annular raised portion sealingly engaging said bottom wall about said centrally located opening of said cannister;



a cover;

means for removably attaching said cover to said base in fluid sealed engagement with said gasket and in a spaced surrounding relationship to said cannister thereby enclosing said cannister, said cover and said cannister cooperating to define a fluid flow passage therebetween, said offset opening being in flow communication with said passage and thereby with said open upper end of said cannister; and

a pair of check valve means for placing said first ends of each of said pair of passage means in flow communication with each of said breathing tubes and for providing one way flow of gas through said apparatus between said breathing tubes.

4,353,367

CONTAINER FOR STERILIZING A FLEXIBLE TUBE

Elisa Hunter, Cypress, and Susan Gandy, Houston, both of Tex., assignors to The Clinipad Corporation, Guilford, Conn.

Filed Nov. 14, 1980, Ser. No. 206,851

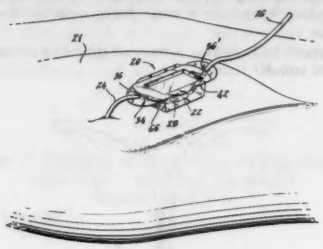
Int. Cl.³ A61M *5/00*

U.S. Cl. 128—213 A **23 Claims**

1. A disposable device for liquid treatment in a medical procedure of a portion of a flexible tube comprising

a lightweight self-supporting disposable plastic molded container having a liquid retaining basin formed by a peripheral wall and a bottom wall, said container having an upper surface which intersects the peripheral wall to form an upper opening for the basin, through which opening the portion of the flexible tube is received, said basin, being sized to retain a limited amount of liquid to a depth sufficient to submerge a portion of the flexible tube to be treated;

said container being further provided with at least one projection which is attached to the container and is sized and located to releasably maintain, in cooperation with a wall



of the container, said tube portion in the vicinity of the bottom wall of the basin.

4,353,368

DEVICE FOR HEMODIALYSIS

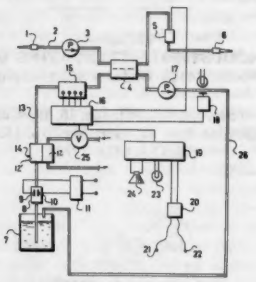
Petr Slovak; Hana Becvarova; Milan Ruml, and Jiri Kracik, all of Prague, Czechoslovakia, assignors to Ceske vysoke uceni technicke, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 973,026, Dec. 26, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,467

Claims priority, application Czechoslovakia, Dec. 23, 1977, 8781-77

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 R **5 Claims**

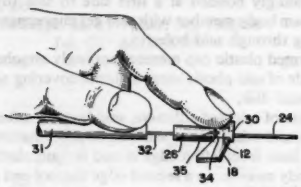


1. A device for hemodialysis comprising a first, arterial blood conducting circuit means comprising an arterial needle adapted to be inserted into an artery of a patient, a first, blood pump means for forwarding blood from the arterial needle, a hemodialyzer having a first chamber receiving arterial blood from the blood pump, a bubble trap receiving arterial blood from the first chamber of the hemodialyzer, and a venous needle receiving arterial blood from the bubble trap, a second, dialyzing solution conducting circuit means comprising a container holding a dialyzing solution, a solution conducting unit containing sensors, a second chamber of the hemodialyzer, a second dialyzing solution pump means for moving the dialyzing solution from the dialyzing solution container through the unit containing sensors into the second chamber of the hemodialyzer, a hemoglobin detector connected to an outlet of said second pump means, an electronic unit provided with acoustic and optical alarms indicating malfunctions of the hemodialysis device, said electronic unit comprising at least two electrodes in the dialyzing solution, and an A.C. power source means connected to said electrodes for providing a sufficient electrical output to said electrodes which is variable in both frequency and amplitude to inhibit the growth of bacteria in the dialyzing solution.

4,353,369
VENIPUNCTURE DEVICE

Andrew J. Muetterties, Gages Lake; Joseph N. Genese, Waukegan, and Charles H. Seberg, Libertyville, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 112,970
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214.4 6 Claims

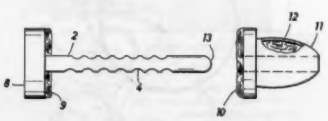


1. An improved venipuncture device comprising:
a needle portion including needle hub means at its proximal end and a sharpened tip at its distal end,
a catheter portion having a catheter hub means at its proximal end with a reseal member fixedly attached thereto, said needle portion extending coaxially through said catheter portion;
a modular wing assembly defining a wing hub member having an axial cylindrical bore therethrough adapted for telescopic reception of and attachment to said catheter hub portion;
said catheter hub means having a tubular portion at its distal end adapted for telescopic insertion and attachment to said modular wing assembly, and means for mechanically removably locking said modular wing assembly to said tubular portion whereby said tubular portion may be removably locked onto and thereby fixedly attached to said modular wing assembly; and
a pair of oppositely extending flexible wing sections flexibly attached to said wing hub member, said flexible wing sections having an area of reduced thickness on each of said flexible wing sections along a portion of the width thereof, substantially adjacent to said wing hub member, said area of reduced thickness being effective to facilitate the folding of said flexible wing sections together so as to be easily held thereby facilitating insertion of said device into the patient's vein.

4,353,370
MEDICATED EAR RODS AND EARRING CONSTRUCTION

Aida L. Evans, 5706 Irish Hill Dr., Houston, Tex. 77053

Continuation of Ser. No. 13,454, Feb. 21, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,464
Int. Cl.³ A61M 35/00
U.S. Cl. 128—269 1 Claim

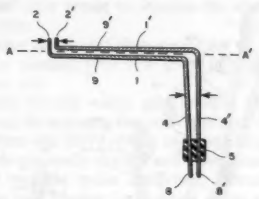


1. A medicated earring comprising:
a substantially rigid elongate plastic member having a filled interior for insertion through a pierced earlobe;
an enlarged pole piece attached to one end of said elongate member for abutting and covering one side of said pierced earlobe;
stopper means adapted to be removably secured to the other end of said elongate member for retaining said plastic member within said pierced earlobe; and
an absorbent material carried by said stopper means and adapted for engagement with a portion of said plastic member and for receiving a cleaning agent, wherein a portion of said elongate member has a substantially reduced diameter, and additional absorbent material is located adjacent said reduced diameter portion.

4,353,371
LONGITUDINALLY, SIDE-BITING, BIPOLAR COAGULATING, SURGICAL INSTRUMENT

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Filed Sep. 24, 1980, Ser. No. 190,301
Int. Cl.³ A61B 17/39
U.S. Cl. 128—303.17 5 Claims



1. A bipolar coagulating surgical instrument adapted for closing upon and coagulating tissue in a direction parallel to its distal axis, comprising:
a proximal portion having a proximal end and a distal portion having a distal end, the proximal portion being so adapted to be held when in use, the distal portion being so adapted to be directed toward the tissue to be coagulated when in use, and said distal portion being of elongated shape so that it can be directed into a deep surgical hole in the living body in order to reach a portion of tissue deep within the surgical hole and so that said distal portion defines approximately a distal axis of said surgical instrument, a first conductive element and a second conductive element which both extend from said proximal end to said distal end, means for electrically insulating at least a portion of said conductive elements with the tips of said conductive elements at said distal end being at least in part uninsulated and being the bipolar coagulating portion of said instrument, and the proximal ends of said conductive elements being adapted to be connected across a coagulating electric potential source when said instrument is in use, actuation means located at said proximal portion being so adapted and so cooperatively coupled to said two conductive elements that when said actuation means is pressed then said tips of said conductive elements will move relative to each other along a direction approximately parallel to the distal axis of said instrument, and said tips being so shaped that at least part of their uninsulated portions will close toward each other in such a way that said uninsulated tip portions can close upon each other and upon a plane which is oriented approximately perpendicular to said distal axis of said instrument, said conductive elements being so adapted to be electrically insulated from each other whenever said uninsulated portions of said tips of said conductive elements are not in contact with each other; whereby, when in use, said distal portion of said instrument can be inserted in to a deep surgical hole in the living body so that said distal axis of said instrument can be approximately aligned with the axis of said deep surgical hole, and, by pressing said actuation means, said uninsulated portions of said tips can be made to close upon a portion of membrane of tissue which hangs from the side walls of said deep surgical hole at a deep location in said surgical hole, said membrane being oriented in a plane that is perpendicular to said distal axis of

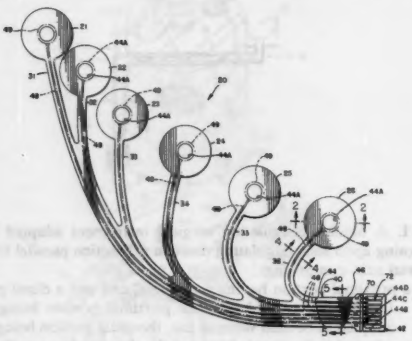
said instrument, said uninsulated portions of said tips closing upon said portion of hanging membrane in a direction approximately parallel to said distal axis of said instrument; whereupon, when a coagulating electric potential is applied to said conductive elements, said membrane may be coagulated between said uninsulated portions of said tips.

4,353,372

MEDICAL CABLE SET AND ELECTRODE THEREFOR

George E. Ayer, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 11, 1980, Ser. No. 120,421
Int. Cl.³ A61B 5/04
U.S. Cl. 128—640 18 Claims



1. A unitary medical cable set for electrical connection to a plurality of body locations, comprising:

connector means for electrical connection to complementary connector means coupled to medical monitoring equipment, or the like, and having a plurality of electrical contacts;

a plurality of electrical lead means each connected at one end to a respective one of said contacts; and

support means secured to said connector means and supporting said plurality of lead means;

said support means having a plurality of branches supporting respective ones of said lead means;

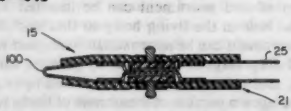
said support means comprising a trunk portion secured to said connector means and supporting said plurality of lead means at a location proximate to said connector means, said trunk portion dividing to form said branches, at different spaced locations away from said connector means so as to prevent entanglement thereof, and said lead means diverging with said branches.

4,353,373

EKG ELECTRODE AND PACKAGE

Robert W. Sessions, Burr Ridge; Jerome Jeslis, Chicago, and Richard A. Rodzen, Bolingbrook, all of Ill., assignors to Ferris Manufacturing Corp., Burr Ridge, Ill.

Filed Apr. 17, 1980, Ser. No. 141,057
Int. Cl.³ A61B 5/04
U.S. Cl. 128—641 3 Claims



1. An EKG electrode and package therefor comprising:

a rectangularly shaped foam body member with an adhesive layer affixed to a first side thereof;

a metal contact which extends through said foam body member, is substantially centered with respect thereto and is attached only to said foam body member;

a gel impregnated circular disk attached to said adhesive layer on said first side of said foam body member centered with respect to said metal contact;

a selected piece of plastic sheet material with a hole therein sealingly bonded at a first side to said first side of said foam body member with said gel impregnated disk extending through said hole;

a formed plastic cap member sealingly attached to the other side of said plastic sheet material covering said gel impregnated disk;

a layer of selected adhesive, said layer of adhesive is located on said other side of said plastic sheet material and extends at least from a first edge of said rectangularly shaped foam body member to a second edge thereof and surrounds said hole in said plastic sheet material, and wherein

said formed plastic cap member includes planar sealing regions, parts of said planar regions extend substantially to said first and second edges of said rectangularly shaped foam body member, said planar regions are in sealing contact with adjacent regions of said layer of adhesive,

whereby said cap member is bonded to said other side of said plastic sheet member by said selected adhesive such that a moisture resistent seal is formed therebetween which completely surrounds a part of said disk, and

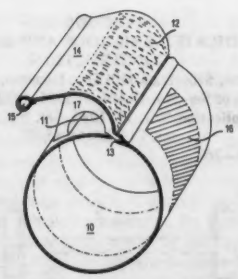
whereby said gel impregnated circular disk is sealed within a moisture retaining region bounded by a part of said first side of said foam body member, a portion of said metal contact, a surface of said plastic sheet material which surrounds a part of said disk, a surface of said plastic cap member adjacent to said gel impregnated circular disk, and said moisture resistant seal.

4,353,374

BLOOD PRESSURE CUFF

Klaus Rebbe, and Klaus Welimann, both of Mannheim, Fed. Rep. of Germany, assignors to Clinicon International GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,733
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843643
Int. Cl.³ A61B 5/02
U.S. Cl. 128—686 8 Claims



1. A blood-pressure cuff comprising a hose-like band; a buckle having a first crossbar and a second crossbar, one end of the band being attached to said first crossbar, and the other, free end of the band being passed between the crossbars to form a loop; and manually releasable fastening means for the temporary strapping of the loop, comprising first means disposed on the band of the cuff, and second means disposed on the second crossbar which is releasably fixable to the first

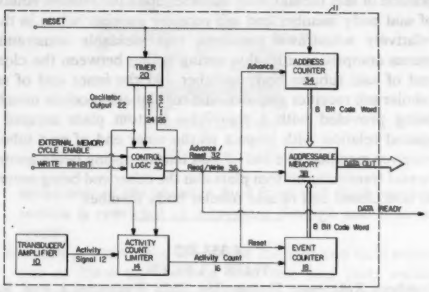
means, wherein the first and second means are coverings which when placed in contact with each other form a releasable fastening.

4,353,375

ACTIVITY MONITOR FOR AMBULATORY SUBJECTS

Theodore R. Colburn, Rockville, and Bruce M. Smith, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed Apr. 26, 1977, Ser. No. 790,988
Int. Cl.³ A61B 5/10
U.S. Cl. 128—782 20 Claims



1. A self-contained single unit physiological monitoring system for monitoring physiological responses, said system comprising:

transducer means for converting each physiological response to an electrical pulse output;

timer/control means for providing standard timing interval signals;

memory means electrically connected to said timer/control means and said transducer means, for recording a number of said pulse outputs over a standard timing interval and for storing said number of pulse outputs over more than one standard timing interval; and

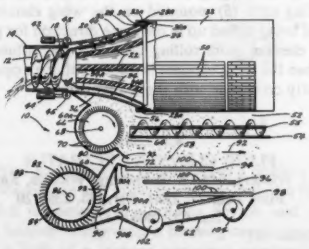
case means, mountable on a subject, for mounting said transducer means, said timer/control means, and said memory means.

4,353,376

COMBINE HAVING SEPARATING AND CLEANING APPARATUS

Murry W. Schuler, Box 66, Rte. #2, Griswold, Iowa 51535

Filed Mar. 12, 1981, Ser. No. 243,122
Int. Cl.³ A01F 7/06
U.S. Cl. 130—27 T 9 Claims



1. A combine comprising:

a longitudinally extending auger having forward and rearward ends;

means for rotating said auger;

a first auger casing surrounding said auger in spaced relation thereto, said first auger casing having forward and rearward ends positioned adjacent said forward and rearward ends of said auger;

a longitudinally extending threshing rotor having a forward end connected to said rearward end of said auger for rotation therewith, and having a rearward end;

a longitudinally extending concave surrounding said threshing rotor in spaced relation therewith to define a threshing space therebetween;

said concave including grate means located below said rotor for permitting threshed grain and chaff to fall downwardly and out of said threshing space;

a housing forming a cleaning chamber below said concave, said cleaning chamber having an inlet opening in communication with said grate means of said concave;

sieve means within said chamber below said inlet opening;

chaffer means within said chamber for directing a stream of air over said sieve means to separate the chaff from the threshed grain;

conveyor means below said sieve means for carrying grain outside said housing after said grain falls through said sieve means; and

impeller means located within said housing adjacent said inlet opening for engaging the grain and chaff falling from said grate into said inlet opening and propelling said grain and chaff downwardly toward said sieve means;

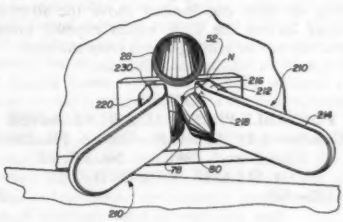
wherein said impeller means comprising a drum rotatably mounted to said housing for rotation about a horizontal axis, said drum having a plurality of radially extending blades for engaging said grain and chaff falling from said grate means into said inlet opening.

4,353,377

GUIDE FOR LEAF STRIPPING APPARATUS

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Jun. 8, 1981, Ser. No. 271,318
Int. Cl.³ A01D 1/00, 45/16
U.S. Cl. 130—30 R 9 Claims



1. Apparatus for stripping leaves from a stalk comprising:

(a) means for supporting the stalk, said means having front and rear ends;

(b) means operably connected for rotating the stalk supporting means;

(c) means operably connected for gripping the stalk and for urging the stalk to move through the stalk supporting means;

(d) means adjacent the rear end for chopping the stalk adjacent the rear end of the supporting means;

(e) means adjacent the front end for stripping leaves from the stalk, said means including a pair of rollers operably connected for counter-rotating in side-by-side relationship for forming a nip, each roller having a free end including a conical tip remote from the apparatus;

(f) means for guiding the leaves to the nip and, in response to some leaves sticking to the rollers, for stripping the sticking leaves from the rollers; and

(g) the guiding and stripping means including a bent member

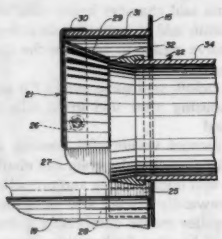
adjacent each roller attached to the apparatus adjacent the front end of the support means, each of said bent members having a stripping portion extending axially along the adjacent roller and in proximity therewith and substantially parallel with said nip, and a guiding portion bent for extending divergently outwardly from said nip.

4,353,378

TOBACCO STALK GUIDE ASSIST

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 17, 1980, Ser. No. 187,876
Int. Cl.[3] A01D *45/16*
U.S. Cl. 130—31 R 5 Claims



1. In a tobacco leaf stripping machine having at least a pair of counter-rotating leaf stripping rolls forming a nip to gently grip the tobacco leaves, a rotatable infeed tube with an infeed end positioned immediately above the nip into which is inserted the tobacco stalk and knife means attachable to the infeed end of the infeed tube, the improvement comprising:

a stalk guide assist attachable to the machine adjacent and substantially surrounding a portion of the knife means effective to guide the tobacco stalk with its leaves thereon into the knife means and the infeed tube to insure the leaves are stripped from the stalk; and

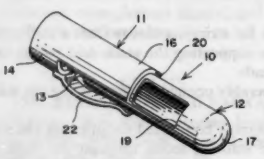
the stalk guide assist being generally semi-circular in shape having an open end located above the stripping rolls thereby leaving the knife means exposed immediately above the nip for cutting leaves from the stalk.

4,353,379

PORTABLE PERSONAL ASH RECEIVER

Rafael Castellanos, 117 E. 11th St., Hialeah, Fla. 33010

Filed Mar. 6, 1981, Ser. No. 241,432
Int. Cl.[3] A24F *19/00*; B65D *73/00*
U.S. Cl. 131—231 2 Claims



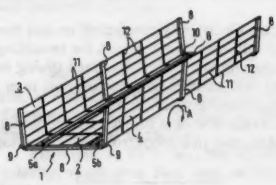
1. A portable personal ash receiver, comprising, in combination, a tubular body member closed at one end, a tubular ash receiver member slidingly received within the other end of said tubular body member in telescoping fashion, an enclosure wall at the outer end of said tubular ash receiver member, a through access opening in the peripheral side-wall of said tubular ash receiver member, said tubular body member having an extended peripheral side-wall portion normally in covering relation with respect to said access opening when said tubular ash receiver member is fully received within said tubular body member, and yieldable means constraining said ash receiver member to be fully received in said tubular body member, whereby, upon manual withdrawal of said tubular ash receiver member with respect to said tubular body member against the urging of said yieldable means, said access opening will be exposed for the receiption of cigarette ashes and butts into said tubular ash receiver member, abutment means operative to selectively maintain said tubular ash receiver member in the withdrawn position with respect to said tubular body member, said abutment means comprising an abutment pin extending outwardly of the peripheral side-wall of said tubular body member and operative to be abuttingly retained in a recess in the outer end of said extended peripheral side-wall portion of said tubular body member upon the relative rotation of said body member and ash receiver member when in their relatively withdrawn positions, said yieldable constraining means comprising a tension spring acting between the closed end of said tubular body member and the inner end of said tubular ash receiver member, said tubular ash receiver member being provided with a transverse bottom plate secured in spaced relation with respect to the inner end of said tubular receiver member, one end of said tension spring being secured to said transverse bottom plate and the other end being secured to said closed end of said tubular body member.

4,353,380

HAIR CURLER

Ingeborg Kolkmann, Hofaue 53a, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,723
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 8011582[U]; Jun. 20, 1980, 8016346[U]
Int. Cl.[3] A45D *2/00*
U.S. Cl. 132—40 14 Claims



1. A hair curler, comprising: a flexible winding member (1) having openings therein, a tensionable spring (5, 5*a*, 5*b*) associated with the winding member for rolling it into a coil when released, the winding member including a flat main element (2) and at least one flat lateral wing element (3, 4) hinged thereto and foldable thereon and thereover, the spring being mounted on the main element in a tensioned condition, and a longitudinal blocking strip (6) mounted on the wing element (3) and capable of being rolled up in only one direction for preventing the main element from rolling up under the influence of the spring when the wing element is folded out ot an open position substantially co-planar with the main element.

4,353,381

FLUID CLEANER APPARATUS

Stephen G. Winters, 6443 S. Broadway, Wichita, Kans. 67214

Filed Feb. 27, 1981, Ser. No. 239,120
Int. Cl.[3] B08B *3/02*
U.S. Cl. 134—111 15 Claims

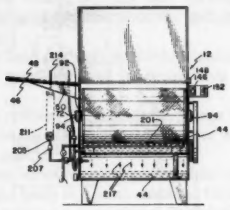
1. A fluid cleaner apparatus adapted to clean automotive parts and the like, comprising:

(a) a support housing assembly having a basic container member with a parts section mounted on a fluid reservoir section, each of said parts and fluid reservoir sections operable to have a cleaning fluid therein;

(b) a parts support drum assembly having a parts support member mounted in said parts section whereby the parts to be cleaned can be mounted on said parts section;

(c) a fluid actuator assembly having a fluid level assembly connected to said basic container member; and

(d) said fluid level assembly includes fluid supply line connected to said fluid reservoir section to supply pressure fluid thereto and a filter assembly mounted between said fluid reservoir section and said parts section whereby



movement of the cleaning fluid from said fluid reservoir section is restricted to movement through said filter assembly;

whereby pressure fluid is supplied through said fluid supply line to force the cleaning fluid into said parts section through said filter assembly for cleaning parts therein; and on release of said pressure fluid from said fluid reservoir section, the cleaning fluid returns to said fluid reservoir section and is concurrently cleaned while passing through said filter assembly.

4,353,382

DEVICE FOR REMOVING THE LACQUER FROM WAVEGUIDES

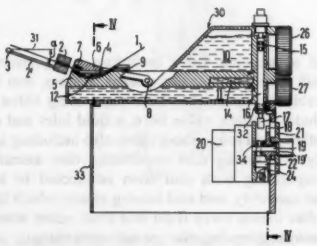
Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,882

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010594

Int. Cl.³ B08B *3/08*

U.S. Cl. 134—113 **11 Claims**



1. A device for removing lacquer from a portion of at least one light waveguide and in particular the end of a light waveguide which is clamped in a holding device, said device for removing lacquer comprising a housing containing a tub for receiving a bath of a lacquer removing substance, said tub having a dimension corresponding to the desired length of the segment to be de-lacquered, and a pivotable arm being mounted in said housing and being movable to a position for holding a portion of the light waveguide, which was disposed above the bath in said tub.

4,353,383

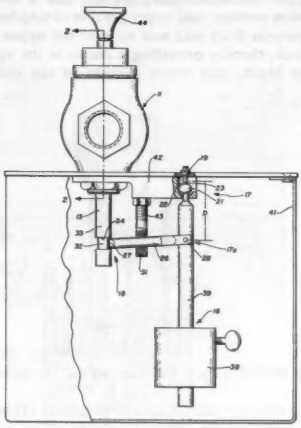
SEISMICALLY ACTUATED VALVE RELEASE STRUCTURE

Donald F. Kiesel, 6801 Amador Valley Blvd., Dublin, Calif. 94566

Filed Oct. 22, 1980, Ser. No. 199,471

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—45 **11 Claims**



1. A vibrationally actuated release structure for use with a valve or the like having a closure member movable between a first position and a second position for controlling fluid flow therethrough, said release structure including a pendulum, mounting means formed for swinging support of said pendulum, a movable member connected to said closure member and mounted to move said closure member between said first position and said second position, biasing means mounted to urge said closure member and said movable member from said first position to said second position, and latch means coupling said pendulum to said movable member and formed to retain said movable member in said first position and to release said movable member for movement to said second position in response to said biasing means upon vibrationally induced swinging movement of said pendulum, wherein the improvement in said release structure comprises:

said mounting means being formed with stop means positioned above said pendulum and formed for pivotal contact with an upper end of said pendulum, said stop means and said upper end having a geometrical configuration of relatively small contact area; and

said mounting means being further formed to urge said upper end into said contact with said stop means to provide low-friction universal unencumbered pivotal support of said pendulum.

4,353,384

HIGH PRESSURE TUBULAR REACTOR APPARATUS

Harold F. Gardner, Odessa, Tex., assignor to El Paso Polyolefins Company, Paramus, N.J.

Division of Ser. No. 974,287, Dec. 29, 1978, Pat. No. 4,255,387. This application Oct. 22, 1980, Ser. No. 199,412

Int. Cl.³ F16K *13/04*

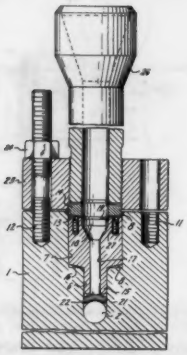
U.S. Cl. 137—68 R **7 Claims**

1. A rupture disc-connection block assembly comprising:

a rectangular block having an upper surface, a bottom surface and two pairs of opposing side surfaces, said block being provided with a longitudinal bore extending from one side surface to its opposing surface, and a centrally positioned lateral bore extending from said longitudinal bore upwards through the upper surface of the block, the

diameter of the lower portion of the lateral bore being about equal to that of the longitudinal bore and the diameter of the upper portion of the vertical bore being substantially larger than that of the longitudinal bore, thereby providing a seat having a ring shape cross sectional area within the block;

supported by said seat and closely fitting within said lateral bore a removable necked rupture disc holder having a larger diameter upper portion and a smaller diameter lower portion, said upper portion of said holder extending upwards from said seat to near the upper surface of the block, thereby providing a recess in the upper surface of the block, said lower portion of the holder extending



downwardly from said seat into the lower portion of the lateral bore of the block, said holder being provided with a lateral bore having a relatively small diameter in the lower portion of the holder and a relatively large diameter in the topmost portion of the holder;

a support ring affixed to the lower portion of the holder and having about the same cross sectional dimensions as those of said lower portion of the holder;

a rupture disc affixed at its periphery to the support ring and positioned at the junction of the lateral bore of the block and the uppermost portion of the longitudinal bore;

means for providing sealing contact between the rupture disc holder and the seat within the block.

4,353,385

DIAPHRAGM PRESSURE REGULATOR

Wolfgang Maisch, Schwieberdingen; Klaus-Jürgen Peters, Affalterbach; Michael Wissmann, Gerlingen, and Karl Gmelin, Ingelfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

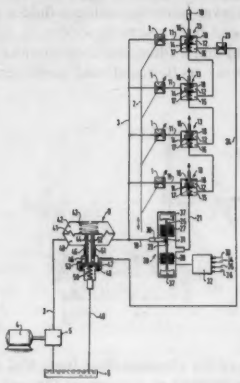
Filed Feb. 20, 1981, Ser. No. 236,385

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006587

Int. Cl.³ F02M *37/00*

U.S. Cl. 137—115 **5 Claims**

1. A diaphragm pressure regulator for regulating the fuel pressure in a fuel injection system, having a movable valve element embodied as a valve diaphragm and a valve seat arranged to cooperate with said valve diaphragm, characterized in that said valve diaphragm separates a spring chamber from a system pressure chamber, said system pressure chamber arranged to communicate with the fluid to be regulated, and said valve diaphragm further arranged to be urged by a system pressure spring disposed in said spring chamber in the direction of said valve seat which protrudes axially and displaceably into said system pressure chamber, said valve seat being supported in an axial bearing point, said valve seat further having an end remote from said valve diaphragm which comprises a valve plate which protrudes into a collection chamber and arranged to open a sealing seat to a greater or lesser extent toward a return flow line, a closing pressure spring positioned beneath said valve plate to urge said valve seat in the direction of said valve diaphragm and against a stop remote from said sealing seat, so that when said valve diaphragm is lifted up from said



valve seat fluid can flow out via a conduit into said collection chamber and further wherein a throttle gap is provided between said system pressure chamber and said collection chamber.

4,353,386

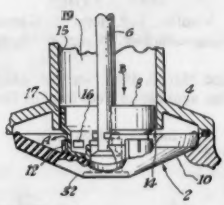
SEQUENCING VALVE

Roger D. Siagel, 641 NW. 74th Ave., Plantation, Fla. 33317

Filed Aug. 17, 1981, Ser. No. 293,362

Int. Cl.³ G05D *11/03*

U.S. Cl. 137—119 **3 Claims**



1. A fluid sequencing valve including a sequencing disc assembly with a sequencing disc means, a stem, and biasing means, operably connected in a fluid sequencing valve whose housing includes a check valve bore, a fluid inlet and at least two fluid outlets, said sequencing valve also including a means for rotatably positioning said sequencing disc assembly by movably cooperating with said stem connected to said sequencing disc assembly, and said biasing means which lifts said sequencing disc means away from said fluid outlet when fluid flow stops, said sequencing disc means comprising:

a generally cup-shaped check valve means operably connected in said housing for movement relative to inlet fluid flow and inlet fluid pressure and having cup-shaped body with a generally cylindrical wall;

said cup-shaped valve means being continuously engaged within the check valve bore adjacent said fluid inlet in said housing during all positions of said sequencing disc;

a means for allowing fluid to drain from said cup-shaped valve at a predetermined flow rate; and

said sequencing disc connected to said cup-shaped check valve means;

said sequencing disc including an aperture disposed there-

through operably positioned on said disc for allowing outflow of fluid through at least one of said fluid outlets in said housing, said sequencing disc reciprocating into engagement with said fluid outlets each time fluid pressure above a predetermined minimum pressure is applied to said inlet, said means for rotatably positioning operating to rotatably position said aperture into alignment with the next successive outlet with at least one successive reciprocation, fluid being conveyed first from said inlet into said check valve bore, then into and through said check valve means and finally through said drainage means before passing through said disc aperture said check valve means including:

at least one fluid exit port operably positioned in said cylinder wall to allow fluid to drain from said cup-shaped valve;

at least one resilient one way valve means connected to said exit port on the outside of said cylinder wall and overlying said exit port;

said one way valve means allowing fluid to drain from said cup-shaped body at a predetermined fluid flow rate lower than the minimum operational fluid flow rate of said sequencing valve to allow said housing to empty of fluid when flow ceases;

said one way valve means positioned relative to said exit port such that said sequencing disc seats against each said fluid outlet for all fluid flow rates;

said one way valve means positioned relative to said exit port such that reverse fluid flow into said fluid outlets is substantially restricted.

4,353,387

DRAINAGE DEVICE

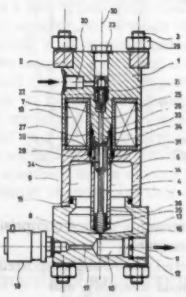
Pierre A. Bouygues, Decines, and Jean-Marie Delcoustal, Bron, both of France, assignors to Delle-Alsthom, Villeurbanne, France

Filed May 15, 1980, Ser. No. 150,121

Claims priority, application France, May 25, 1979, 79 13324

Int. Cl.³ F16T *1/00*

U.S. Cl. 137—203 **5 Claims**



1. A drainage device for removing liquid contained in a compressed gas tank, said device including:

a drainage chamber, means for communicating said drainage chamber with the lower portion of the tank, said drainage chamber being provided with an outlet orifice which opens to a pressure which is less than the tank pressure;

first means for closing the outlet orifice;

second means for opening the orifice after it has been closed by the first means; and

third means for partially cutting off communication between the tank and the drainage chamber when the gas pressure in the drainage chamber is lower than the gas pressure in the tank.

4,353,388

BUTTERFLY VALVE

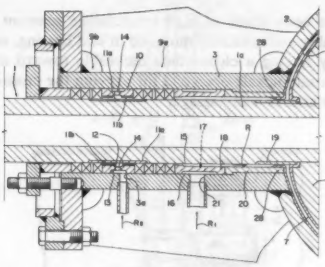
Mitsunori Isoyama, Hirakata; Susumu Takeda, Amagasaki, and Masatoshi Nakai, Hirakata all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jul. 9, 1980, Ser. No. 167,021

Claims priority, application Japan, Jul. 12, 1979, 54-88847; Jul. 17, 1979, 54-91080

Int. Cl.³ F16K *49/00*

U.S. Cl. 137—240 **7 Claims**



1. A butterfly valve comprising:

a valve housing (2) having first and second tubular portions (3,3);

a valve stem (1) extending in said tubular portions (3,3) and carrying a valve closure member (6) rotatable in said valve housing (2);

first and second gland packing portions (9,9) provided between said stem (1) and said first and second tubular portions (3,3) to prevent fluid leakage;

first and second bearing portions (4,4) for said valve stem (1) provided outwardly of said gland packing portions (9,9) respectively, wherein each of said first and second gland packing portions (9,9) is divided axially of said valve stem (1) into two sections (9*a*,9*b*), and including a bearing member (10) is fitted between said valve stem (1) and said tubular portion (3) at a position intermediate between said two sections (9*a*,9*b*); and

an inlet duct (R1) penetrating each of said tubular portions (3,3) and a passage (R) provided between said valve stem (1) and each of said first and second tubular portions (3,3) to introduce purge fluid into said valve housing (2), said passage (R) being defined at least at a position adjacent to an inwardly opening end (28) of each of said tubular portions (3,3) by a collar (19) surrounding said valve stem (1) and a bush (20) fitted against an interior wall of said tubular portion (3);

said inlet duct (R1) including at least one perforation (21) defined in at least one of said tubular portions (3,3), and a purge ring (18) fitted in each of said tubular portions (3,3), said purge ring (18) having a peripheral groove (16) and a plurality of pores (17) defined circumferentially thereof to communicate with said peripheral groove (16) and said passage (R), said perforation (21) and said peripheral groove (16) being in communication and said pores (17) being staggered with said perforation (21).

4,353,389

HOT GAS VALVE

Ernst Engl, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm G.m.b.H., Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,120

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943891

Int. Cl.³ F16K *31/44*

U.S. Cl. 137—375 **9 Claims**

1. A valve arrangement for varying the cross-sectional flow area of a passage for conducting hot gases, particularly fuel

rich gases flowing into the combustion chamber of a ramjet engine, comprising:

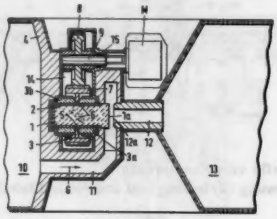
a housing defining said passage;

a nozzle having an open end communicating with said passage forming a valve seat for receiving the hot gas;

means in said housing defining a hot gaseous supply conduit for supplying hot gases to said passage;

a high temperature resistant and insulating bearing in said housing having a plurality of helically extending grooves circumferentially spaced and extending through said bearing;

a valve body made of high temperature resistant material slidably and rotatably mounted in said bearing, said valve body having a closed face moveable toward and away from said nozzle open end for varying the cross-sectional flow area of said passage;



a spoke extending through each of said bearing grooves and connected to said valve body;

a spur gear fixed to an outer end of each of said spokes and circumferentially disposed around said bearing outside said valve body, said spur gear connected to said valve body only through said spoke; and

drive means engaged with said spur gear for rotating said spur gear to rotate said valve body through said spokes;

said bearing being fixed with respect to said valve body and spur gear so that rotation of said spur gear causes movement of said spokes in said bearing grooves to axially move said valve body closed face toward and away from said nozzle open end said spur gear moving axially relative to said drive means.

4,353,390

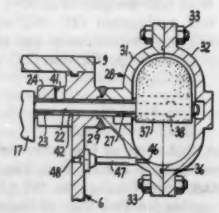
SWING CHECK VALVE WITH INTERNALLY BALANCED DISC

Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor/Darling Valve Company, San Mateo, Calif.

Continuation-in-part of Ser. No. 100,721, Dec. 6, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 244,330

Int. Cl.³ F16K *15/18, 31/44, 15/00*

U.S. Cl. 137—527.8 **6 Claims**



1. A check valve comprising:

a valve body having an inlet and an outlet;

a valve seat in said body and disposed at a first angle with respect to vertical to be upwardly inclined toward said inlet;

a shaft rotatably mounted in said body adjacent said valve seat, said shaft having one end thereof extending out of said valve body;

a valve disc fixedly mounted on another end of said shaft for rotation therewith, said valve disc being located in said valve body to seat on said valve seat to interrupt fluid flow between said inlet and said outlet;

a housing mounted on said valve body and receiving therein said shaft one end;

fluid passage means fluidly connecting the interior of said valve body with the interior of said housing for draining condensate into said valve body, said fluid passage means including a conduit in which said shaft is located; and

a counterweight fixedly mounted on said shaft one end for rotation therewith and located in said housing, said counterweight being mounted on said shaft one end off center of said counterweight by a second angle which is less than said first angle so that when said valve disc is seated against said valve seat said counterweight is in advance of vertical with respect to flow direction through said valve body to provide a closing bias on said valve disc.

4,353,391

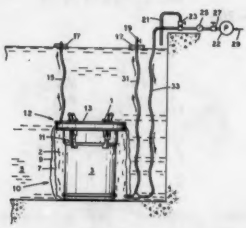
RADIOACTIVE MATERIALS SHIPPING CASK ANTICONTAMINATION ENCLOSURE

Mark S. Belmonte, Irwin; James H. Davis, and David A. Williams, both of Pittsburgh, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 18, 1981, Ser. No. 293,911

Int. Cl.³ F16K *23/00, 24/00*

U.S. Cl. 137—565 **9 Claims**



1. An anticontamination device comprising:

(a) a seal plate assembly,

(b) a double layered plastic bag supported by, and connected to, said seal plate assembly, and

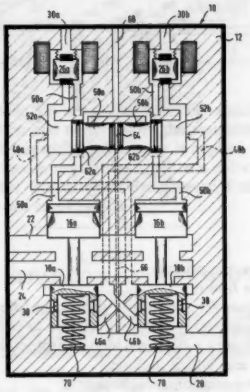
(c) a means for water management connected to said bag and assembly;

said seal plate assembly comprising an upper plate provided with a means for venting water and at least one means for attaching said upper plate to a lifting means capable of removing said upper plate from said bag; said double layered plastic bag comprising an inner plastic bag and an outer plastic bag including a reinforced plastic material, said inner bag being provided with a means for connecting said bag to said water management means; said means for water management including connecting means to connect a supply of clean water to said double layered bag, means for measuring the flow of clean water from said clean water supply to said bag, means for controlling the rate of flow of clean water to said bag, and means to supply said clean water to said bag.

4,353,392
SAFETY VALVE ASSEMBLY

Erich Ruchser, Kernen, and Helmut Ott, Stuttgart, both of Fed. Rep. of Germany, assignors to Technomatic AG, Aesch, Switzerland

Continuation-in-part of Ser. No. 969,482, Dec. 14, 1978, Pat. No. 4,269,225. This application Feb. 6, 1981, Ser. No. 232,242
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005547
Int. Cl.³ F15B *13/043, 20/00*
U.S. Cl. 137—596.16 **7 Claims**



1. A safety valve assembly for pressure medium operated consumer devices, comprising a housing containing an inlet port, a consumer port and a return port; a pair of parallel-connected directional control valves arranged for controlling the communication between respective ports, said directional control valves including working spaces, working pistons movable in said working spaces, valve members coupled to respective working pistons, a pair of separate bores arranged between said inlet port and said consumer port for guiding said valve members, and a pair of passages crossing each other and interconnecting said separate bores; a pair of preliminary control valves each having a valve seat communicating with the working space of the assigned directional control valve; a pair of preliminary control channels interconnecting respectively a valve seat with one of the crossing passages to enclose an amount of pressure medium sufficient for switching over said working pistons and said valve members when said preliminary control valves are simultaneously operated; and means for biasing said valve members into a closing position in which said preliminary control channels are shut off from said inlet port.

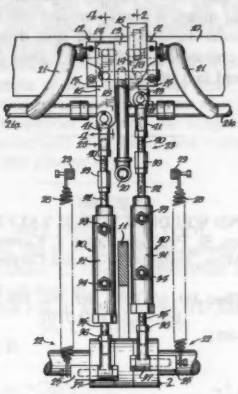
4,353,393
SELECTIVE SHUTOFF FOR REPETITIVELY OPERATED VALVE

Jorg Schniter, Glenview, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Mar. 19, 1981, Ser. No. 245,531
Int. Cl.³ F16K *31/524*
U.S. Cl. 137—624.2 **7 Claims**

1. In a fluid system for operating a member which must be actuated at regular intervals and which must be selectively disabled and enabled, said system including a valve with a body having a fluid inlet port and a fluid outlet port, and a valve element in said body which is movable between an open position permitting fluid to flow from the outlet port through the inlet port and a closed position blocking the flow of fluid between said ports, and a continuously operating mechanical valve actuator means including a link operatively connected to the valve element for regularly moving said element between said open and closed positions, means for selectively disabling and enabling said valve element, said means comprising, in combination:

a member in said link having first and second relatively movable parts for changing the length of the link between a first length in which the valve element is moved between open position and a normal closed position and a second length in which said valve element is moved between said normal closed position and a second closed position;

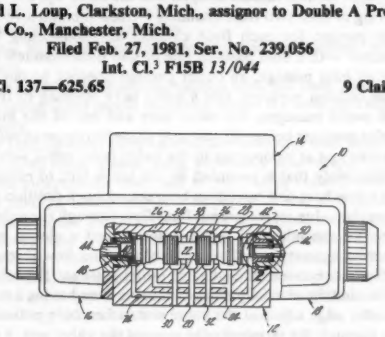


and means for selectively moving said parts relative to one another to change the length of said link while the system is in operation.

4,353,394
SOLENOID OPERATED DIRECTIONAL VALVE WITH DETENT MECHANISM

Ronald L. Loup, Clarkston, Mich., assignor to Double A Products Co., Manchester, Mich.

Filed Feb. 27, 1981, Ser. No. 239,056
Int. Cl.³ F15B *13/044*
U.S. Cl. 137—625.65 **9 Claims**



5. A directional valve having a valve body provided with passageways for directing flow of hydraulic fluid, a spool member mounted for movement in said valve body and operatively associated with said passageways and movable to selected positions for controlling flow of hydraulic fluid through the passageways, means mounted on said valve body in alignment with said spool member, and a pin member responsive to said means for movement axially to shift said spool member to a selected position, a detent means mounted so as to be confined in a fixed axial position relative to said valve body and positioned on one of said spool and said pin members for retaining said one member against axial movement when said means has moved said members to said selected position of the spool member, said one member having a groove extending around

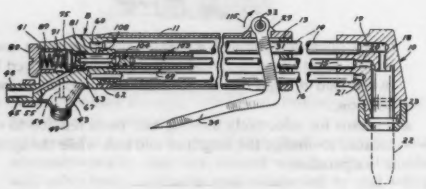
its circumference shaped to provide a ramp that is inclined axially and extends to an adjacent outer circumference to said one member, said detent means including split detent sleeves of similar shape having inner surfaces shaped to allow axial sliding movement against the surfaces of the ramp and the adjacent outer circumference of said one member, and spring means urging said sleeves radially together, characterized in that said spring means is a wrap-around coil-spring seated on the radially outer surfaces of said split detent sleeves, said wrap-around coil-spring having more than one convolution wrapped around said sleeves.

4,353,395

CUTTING AND WELDING TORCH VALVE APPARATUS

Craig E. Nelson, St. Paul, and Frank T. Kawamoto, Minneapolis, both of Minn., assignors to Tescom Corporation, Minneapolis, Minn.

Filed Jul. 14, 1980, Ser. No. 168,511
Int. Cl.³ F17D *3/01*
U.S. Cl. 137—861 6 Claims



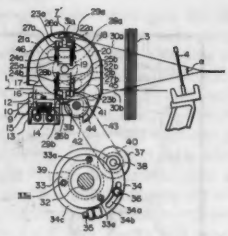
1. Torch apparatus having a torch head, a torch tip mounted in said torch head, said torch head having at least two fluid passages formed therein to open into the torch tip, a torch butt having at least two fluid channels formed therein, a fluid conduit portion for each fluid channel interconnecting a fluid channel with a fluid passage, one of said fluid channels including an inlet passage, an outlet passage opening to one of the fluid conduit portions, and a valve bore opening to the inlet and outlet passages, the valve bore and one of the inlet and outlet passages being of a size and shape to cooperatively form a valve seat at its opening to the valve bore, and a valve stem subassembly that is mounted on the torch butt to extend into the valve bore and operative between an open position spaced from the valve seat to permit fluid flow through the valve bore between the inlet and outlet passages and a closed position abutting against the valve seat to block fluid flow through the valve bore between the inlet and outlet passages, the subassembly including an axially elongated valve stem having a terminal annular edge adjacent the valve seat, a first bore potion opening through the terminal edge toward the valve seat, a second bore portion opening to the first bore portion axially opposite the first bore portion from the terminal edge, a first ball rotatably mounted by the valve stem to extend within the first bore portion and have a minor portion thereof extending away from the terminal edge toward the valve seat that will block fluid flow through the valve seat when the subassembly is in its closed position with the first ball abutting against the valve seat, and a second ball rotatably mounted in the second bore portion and extending into abutting relationship with the first ball to block axial movement of the first ball relative the valve stem in a direction away from the valve seat while permitting rotation of the first ball relative thereto and relative the valve stem, the first and second bore portions being of diameters to block any significant transverse movement of the first and second balls respectively.

4,353,396

DEVICE FOR FORMING A SELVEDGE IN A LOOM

Hajime Suzuki, Anjo, and Yoshimi Iwano, Oobu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 5, 1979, Ser. No. 100,286
Claims priority, application Japan, Dec. 11, 1978, 53-170490[U]; Dec. 29, 1978, 53-182596[U]
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—54 7 Claims



1. A loom comprising:
a machine frame;
heald frames for supporting ground heddles of warps; and
a device adjustably disposed relative to said machine frame for forming a selvedge which is disposed behind said heald frames and which includes:
a power transmitting mechanism;
a rotatable member which is rotated by said power transmitting mechanism;
a pair of selvedge yarn guides which are attached to said rotable member and which are utilized to withdraw selvedge yarns, whereby said selvedge yarns are opened and closed in synchronism with the shedding motion of said warps and are formed into a selvedge by being twisted together at every weaving,
said device being displaceable along the warp running direction normal to the heald frames of said machine frame and capable of being fixedly secured at a certain position;
a pair of dovetailed guide rails fixedly disposed at the inside of said machine frame so as to face each other and extending in the warp running direction of said machine frame; and
a pair of slide beams slidably disposed on said guide rails, and capable of being fixedly secured thereto,
said device for forming a selvedge being mounted on said slide beams.

4,353,397

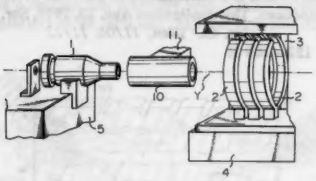
APPARATUS FOR INSERTING A WEFT ON AN AIR JET LOOM

Takumi Tera; Hidetaro Omote, both of Kanazawa, and Satoru Kitamura, Matsuto, all of Japan, assignors to Ishikawa Seisakusho Ltd., Japan

Filed May 12, 1980, Ser. No. 148,819
Claims priority, application Japan, Jun. 1, 1979, 54-69071
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 15 Claims

1. Apparatus for inserting a weft through a warp shed of an air jet loom, comprising:
a main jet nozzle through which a weft is propelled under the force of a jet of air;
yarn guides located in said shed;
an accelerator tube located between said main jet nozzle and said yarn guides but outside of said shed, said accelerator tube having an opening extending in the direction of travel of said weft as it travels from said main jet nozzle to said shed, the length of said opening extending from an inlet end to an outlet end of said tube, said inlet end of said tube being

closer to said main jet nozzle than said outlet end and being spaced from said main jet nozzle by a gap, the distance of said gap as measured along said direction of travel and the inner diameter of said accelerator tube inlet opening being such that a negative pressure is created in the vicinity of said



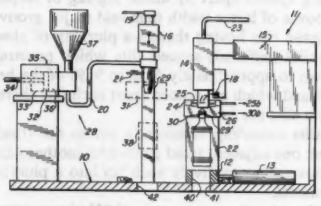
gap and ambient air is sucked into said accelerator tube through said first end thereof with the resultant effect that increased weft transportation energy is applied to said weft and said weft travels toward said shed at a velocity which is greater than that which would be achieved if said accelerator tube were not employed.

4,353,398

STERILIZING APPARATUS FOR AN ENCAPSULATING MACHINE

Gerhard H. Weiler, South Barrington; Paul A. Anderson, Arlington Heights, and Louis T. Pagels, Hanover Park, all of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Jan. 5, 1981, Ser. No. 222,358
Int. Cl.³ B65B *3/04*; F16K *51/00*
U.S. Cl. 141—91 **17 Claims**



1. Apparatus for the sterilization of a machine used in the formation, filling and sealing of containers formed from thermoplastic material, which machine includes a liquid metering device having a variable volume dosing chamber defined by a shifting piston having a dosing chamber side and a piston rod side and being controlled by an inlet valve and an outlet valve, and a filling device connected to said outlet valve and having a gas feed line that is adapted to communicate with a formed plastic container, said filling device cooperating from time to time with a molding arrangement used in the formation of the container, the apparatus comprising:

(a) a source of fluid sterilization agent, with a first and a second fluid passageway providing communication from said source to said metering device, said first passageway communicating with the dosing chamber side of said shifting piston and the second passageway communicating with the piston rod side of said shifting piston, said first passageway being connected to said metering device through said inlet valve for said dosing chamber; and a third fluid passageway providing communication from said source to said gas feed line,

whereby sterilizing agent from said source is passed to said metering device on each side of said shifting piston, from said dosing chamber to and through said filling device, and from said source to said gas feed line and through said filling device, the sterilizing agent thereby being passed through said filling device in two paths;

(b) microorganism filter means, in at least one of said second and third fluid passageways, for filtering the fluid passing therethrough; and

(c) gas supply and test means, disposed in a series flow relationship with said filter means, for supplying gas under pressure through said filter means, for bypassing flow around said filter means, and for measuring the pressure of the gas applied to said filter means,

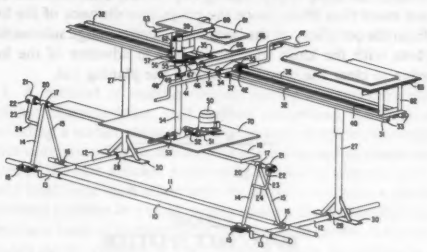
whereby by measuring the pressure change over time in an isolated portion of that passageway open to said filter means the integrity of said filter means after sterilization is determinable without breaking the integrity of the passageway having said filter means and without having to re-sterilize said passageway.

4,353,399

MULTIPURPOSE TOOL

Richard L. Harris, 301 First St. East, Stewartville, Minn. 55976, assignor to Richard L. Harris, Stewartville and Ralph W. Blader, Richfield, both of, Minn.

Filed Feb. 1, 1980, Ser. No. 117,633
Int. Cl.³ B27B *17/00*
U.S. Cl. 144—2 R **8 Claims**



1. A tool device comprising:

a base having transverse members and longitudinal members,

work holding stand means engaged with said base, said work holding stand means including means for holding a workpiece,

tool holding stand means also attached to said base, said tool holding stand means being adjustably spaced apart from and independent from said work holding stand means,

tool holding means movably disposed on said tool holding stand means for transverse and longitudinal movement,

whereby said work holding stand means with said work holding means and said tool holding stand means with said tool holding means may be manipulated independent from each other yet at a location adjacent each other to allow working interaction.

4,353,400

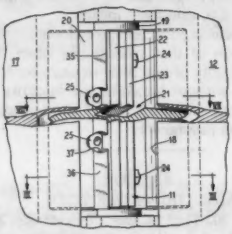
CONTROLLED CHIP CUTTERHEAD FOR PLANERS AND JOINTERS

Richard J. Flanigan, and Charles L. Boles, both of McMinnville, Tenn., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Oct. 23, 1980, Ser. No. 199,951
Int. Cl.³ B27C *1/14*
U.S. Cl. 144—117 R **13 Claims**

7. In a wood planing machine having an in-feed table and an out-feed table with a gap between the tables and means to adjust the level of the in-feed table to control the depth of cut of the wood, the improvement of a cutter head assembly having a cylindrical body of a diameter sufficiently large to project the periphery of the body into the gap between the tables at a

level substantially flush with the out-feed table, said body having a plurality of longitudinal slots in the periphery thereof, each slot having leading and trailing sidewalls, a knife in each slot abutting the trailing sidewall thereof, adjusting nuts bottomed in the slots engaging the bottoms of the knives to project the knives a controlled distance beyond the periphery of the body, a gib in each slot bottomed on each knife, locking



bolts threaded in each gib bottomed on the leading edge of the slot to wedge lock the gib and knife in the slot, each gib having a chip breaker pocket in the outer end thereof immediately in front of the knife with a trailing edge down from the knife edge not more than about twice the projection distance of the knife from the periphery of the body and a leading edge substantially flush with the knife edge positioned in advance of the knife edge to clear the wood just before the planing cut.

4,353,401

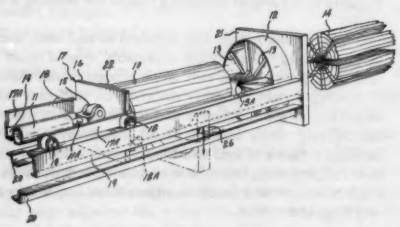
ROTATABLE SPLITTER

Walter W. Schilling, Delta, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Oct. 21, 1980, Ser. No. 199,188

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 A **19 Claims**



1. An apparatus for splitting a log substantially along the grain into a plurality of sector-shaped segments comprising:

at least one sector splitter ring having a plurality of blades,

support for locating said splitter ring in a log movement path,

pressure means for pushing the log axially along the log movement path,

a rotating backplate for supporting one end of the log being pushed axially along the log movement path,

said backplate adapted to tilt and allow the one end of the log to rotate while the log is pushed through the splitter ring, and

guide means adapted to retain the floating backplate in the log movement path while the log is pushed through the splitter ring.

4,353,402

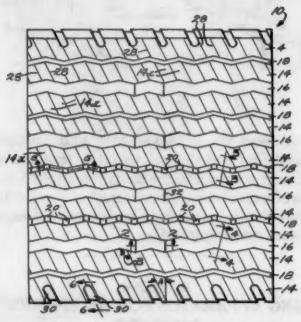
SLITTED TIRE TREAD

Ioan A. Burche, and Edwin T. Brodie, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Continuation of Ser. No. 916,108, Jun. 16, 1978, abandoned, which is a continuation of Ser. No. 836,739, Sep. 26, 1977, abandoned, which is a continuation of Ser. No. 441,815, Feb. 12, 1974, abandoned. This application Aug. 23, 1979, Ser. No. 69,187

Int. Cl.³ B60C *11/06, 11/12*

U.S. Cl. 152—209 R **3 Claims**



1. A prevulcanized tire tread strip having:

a plurality of parallel projecting tread ribs separated by tread grooves, thereby having a tread rib area and a void area,

said ribs extending completely across the tread strip and being disposed in groups of at least two ribs per group,

said groups being spaced apart by major tread grooves of zig-zag or serpentine shape and the ribs of each group being spaced apart by minor zig-zag or serpentine tread grooves of lesser width than said major grooves,

said tread ribs having therein a plurality of closely spaced parallel uniformly-spaced slits which penetrate the ribs down to approximately 55% to 95% of the height of the ribs and which are spaced apart such that there are one to eight slits per inch,

said slits extending completely across the tread strip and from one adjacent tread groove to another adjacent tread groove so as to divide each rib into a plurality of tread elements,

said slits extending at an angle of 25° plus or minus 15° with respect to the transverse dimension of the tread strip and intersecting the tread rib edges at between about 45° and about 135°,

the ratio of tread rib area to void area being in the range of about 1.5:1 to 8:1, and

a plurality of tie bars having ends connecting tread elements on one side of a minor groove with tread elements on the other side of the same minor groove,

said tie bars having longitudinal dimensions between said ends sufficient to substantially prevent severance of said tie bars between their respective ends by said slits, said tie bars extending across their respective grooves and being integral with their respective tread elements,

said major grooves being set free of tie bars.

4,353,403

PNEUMATIC TIRE HAVING AIR ESCAPE MEANS

Terrence M. Ruip, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

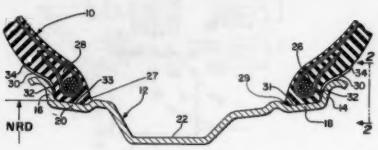
Continuation of Ser. No. 853,685, Nov. 21, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 219,393

Int. Cl.³ B60C *15/02, 5/16*

U.S. Cl. 152—353 R **3 Claims**

1. A tubeless pneumatic tire comprising a pair of bead portions, means on each bead portion providing airtight sealing

relation with a bead seat of a first rim having a first rim diameter on which the tire is designed to be mounted and inflated for use, said means comprising a bead toe surface on each bead portion which when in the mold in which the tire is cured forms an angle with a line parallel to the rotational axis of the tire, and additional means on at least one bead portion for preventing inflating of said tire when it is mounted on a second rim having a second rim diameter which is about one-quarter to three-quarters of an inch less than the first rim diameter of



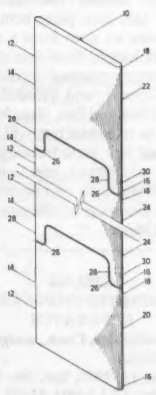
the first rim, said additional means comprising projections on the exterior surface of said one bead portion forming an air escape between said one bead portion and a flange of the second rim, said projections being spaced apart circumferentially about the tire rotational axis and starting from a point spaced radially outward of the nominal rim diameter of said tire, the exterior surface of the tire in between said projections being free of any projections extending circumferentially of the tire.

4,353,404

JOINTED VERTICAL SLAT FOR WINDOW BLIND

Mark D. Trantow, Wausau, Wis., assignor to Wausau Metals Corp., Wausau, Wis.

Filed Feb. 2, 1981, Ser. No. 230,693
Int. Cl.³ E06B *3/12*
U.S. Cl. 160—236 **3 Claims**



1. In a window blind including a plurality of vertical wooden window blind slats (10), each window blind slat (10) having a vertical longitudinal axis, the improvement of each window blind slat comprising:

(a) a plurality of substantially flat, rigid, vertically extending slat sections (12), including at least a top slat section (22) and a bottom slat section (20), each slat section (12) having a vertical, substantially planar face (14) and an upper end (18) and a lower end (16); and

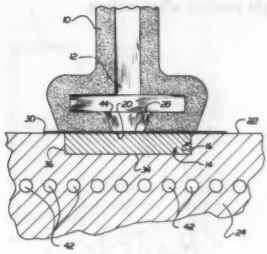
(b) means for joining the slat sections (12) end-to-end in a hinged joint, with the faces (14) of the joined slat sections (12) in substantially the same plane, the lower end (16) of each slat section (12) being joined to the upper end (18) of any slat section (12) immediately beneath it, the hinged joint allowing pivotal movement between adjacent slat sections (12) only about a horizontal axis lying in the plane of the slat sections (12) so that each slat section (12) can independently hang vertically, so that the entire slat (10) appears vertical regardless of warping and bowing in any of the slat sections (12).

4,353,405

CASTING METHOD

Thomas A. Kolakowski, Moreland Hills, and Constantine Vishnevsky, Solon, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 18, 1980, Ser. No. 141,312
Int. Cl.³ B22D *25/06*
U.S. Cl. 164—122.2 **15 Claims**



1. A method of casting articles having desired crystallographic characteristics, said method comprising the steps of providing a starter element having crystallographic characteristics corresponding to the desired crystallographic characteristics of the cast articles, positioning the starter element and a mold relative to each other with the starter element in a predetermined position in a mold cavity, cooling the starter element, flowing a body of molten metal into the mold cavity, maintaining the starter element at a temperature below its solidus temperature throughout the extent of the starter element until engagement of the molten metal with the starter element, solidifying the body of molten metal in the mold cavity, said step of solidifying the body of molten metal including the step of initiating solidification of the molten metal at the starter element while performing said step of flowing molten metal into the mold cavity, providing a physical discontinuity between the cast article and the starter element during solidification of the molten metal such that to form a cast article having crystallographic characteristics determined by the crystallographic characteristics of the starter element without significant bonding between the solidified body of metal and the starter element, separating the solidified body of metal from the starter element at the physical discontinuity, and subsequently using the starter element to initiate the solidification of a second body of molten metal during the casting of another article.

4,353,406

METAL CASTING MACHINE

Roberto Gaddi, Turin, Italy, assignor to Fataluminium S.p.A., Rivoli, Italy

Filed Sep. 5, 1980, Ser. No. 184,444
Claims priority, application Italy, Sep. 17, 1979, 68824 A/79
Int. Cl.³ B22D *41/06*
U.S. Cl. 164—336 **11 Claims**

1. A metal-casting machine of the type comprising:

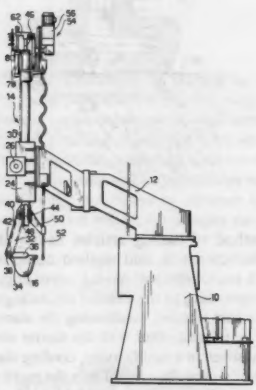
a casting ladle having a casting spout,

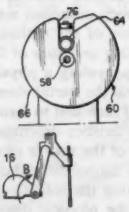
a movable support member on which the ladle is mounted for rotation about a horizontal axis passing substantially through the casting spout,

means for displacing said support member to convey the ladle

between a filling station where the ladle is filled with a charge of molten metal and at least one casting station, and

control means carried by the support member and including a motor-driven rotary disc cam and a cam-follower cooperating with said cam and connected to the ladle to transform the displacements of the cam-follower into rotations of the ladle, said cam having a peripheral profile which includes, in succession in the normal sense of rotation of the cam, a larger sector and a smaller sector, the larger cam sector having a radius which increases progressively to cause the ladle to rotate, at the or each casting station, from an upright position containing the molten metal to an inclined position, at the end of the casting, in which the spout is lowermost, and the smaller cam sector being of decreasing radius to cause a return rotation of the ladle, in an opposite sense, to the upright position after casting,





wherein the improvements comprise, in combination:

the means for displacing said ladle support member being effective to convey the ladle additionally to at least one cleaning station,

said cam having, between said smaller sector and said larger sector, a re-entrant portion extending towards the axis of rotation of the cam, said cam-follower being engageable in said re-entrant portion to cause a rapid rotation of the ladle, in the said opposite sense, from the upright position to an inverted position in which the cam-follower engages the bottom of said re-entrant portion, and

actuator means acting on the cam-follower to prevent its entry into the re-entrant portion at least when the ladle is at the casting station and to disengage the cam-follower from said re-entrant portion of the cam after inversion of the ladle at the cleaning station.

4,353,407

CONTINUOUS CASTING MACHINE

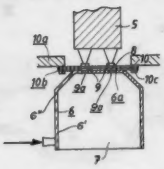
Jan Bostedt, Iduns väg 17, S-723 55 Vasteras, Sweden

Filed Aug. 21, 1979, Ser. No. 68,428

Claims priority, application Sweden, Aug. 22, 1978, 7808830

Int. Cl.³ B22D *11/10, 27/02*

U.S. Cl. 164—468 **1 Claim**



1. A continuous metal casting machine comprising a continuous casting mold adapted to cast a downwardly traveling hot cast strand containing molten metal, means for guiding said strand along a fixed traveling path, an electromagnetic stirrer positioned below said mold beside said path on the outside of said strand so as to stir said molten metal and so as to be exposed to heat from the strand, said stirrer being protected from said head by being encased in a shell including a hollow front wall spaced from and facing said strand, and means associated with said shell for feeding pressurized cooling water to an internal cavity defined by walls of said hollow front wall, an outer wall of said hollow front wall to defining openings pointing towards said strand so as to permit said water to discharge towards said path of travel of the strand; wherein the improvement comprises a flat frame fixed to the outer wall of said hollow front wall so as to surround said openings, a face plate removably fastened to an outer surface of said frame and having nozzle openings defined therethrough and pointing towards said strand, said face plate being spaced from said front wall by said frame so as to form a manifold adapted to receive said water discharged from said openings and distribute the water to said nozzle openings so the latter discharge the water towards said strand, and releasable fastening means associated with said frame and face plate for fastening said face plate to said frame so as to permit removal of the face plate, the nozzle openings in said face plate forming a pattern conforming to the shape of said strand, removal of said face plate permitting its replacement by a corresponding face plate having nozzle openings forming a different pattern when the strand has a different shape.

4,353,408

ELECTROMAGNETIC THIN STRIP CASTING APPARATUS

Michael J. Pryor, Woodbridge, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 11, 1980, Ser. No. 139,617

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—503 **14 Claims**

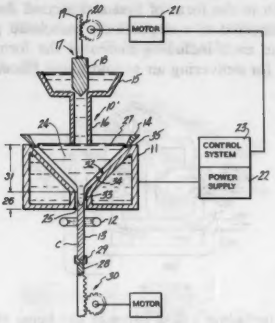
1. In an apparatus for casting a material into a desired thin strip shape, said apparatus comprising:

means for electromagnetically containing and forming said material in molten form into a desired shape; the improvement wherein:

said electromagnetic forming and containing means comprises:

at least one single turn inductor having a first portion for shaping said molten material into said desired thin strip shape and a second portion upstream of and communicating with said first portion for containing solely by an electromagnetic field a sump of said molten material, said second portion of said inductor defining a containment zone air space at a top surface thereof having a cross-sectional area at least five times greater than a cross-sectional

area of a containment zone air space defined by said first portion of said inductor;



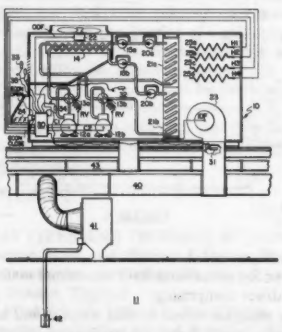
whereby the cross-sectional area at a top surface of said sump of molten material is substantially greater than the cross-sectional area of said desired thin strip shape.

4,353,409

APPARATUS AND METHOD FOR CONTROLLING A VARIABLE AIR VOLUME TEMPERATURE CONDITIONING SYSTEM

James F. Saunders, Onalaska, and Robert E. Krocker, Stoddard, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Dec. 26, 1979, Ser. No. 106,977
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—2 **36 Claims**



1. A method for controlling a temperature conditioning system having a plurality of stages which may be selectively energized to meet a temperature conditioning demand in a comfort zone, comprising the steps of

controlling the temperature in the comfort zone approximately at a setpoint by adjusting the flow of temperature conditioned air supplied to the comfort zone;

sensing the temperature of return air;

sensing the temperature of temperature conditioned supply air;

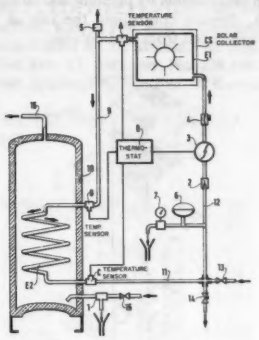
controlling selected apparatus of the temperature conditioning system in response to the differential temperature of the return air and the temperature conditioned supply air, to meet the temperature conditioning demand in the comfort zone.

4,353,410

METHOD OF CONTROLLING THE HEATING OF A CHAMBER AND A CONTROLLED CHAMBER-HEATING INSTALLATION

Pierre Godard, Tremblay les Gonnesse, and Michel Billot, Drancy, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Nov. 5, 1979, Ser. No. 91,099
Claims priority, application France, Nov. 16, 1978, 78 32373
Int. Cl.³ F24J *3/02*
U.S. Cl. 165—18 **12 Claims**



1. A method for controlling the heating of at least one heat storage chamber by means of a heat-conveying fluid, the method comprising:

providing a fluid circuit which includes a heat source, a heat storage chamber and controllable means for ensuring the circulation of a heat-conveying fluid from the heat source and through the heat storage chamber;

sensing the temperature t_A of the heat-conveying fluid at its outlet from the heat source, the temperature t_B of the heat-conveying fluid at its inlet to the heat storage chamber, and the temperature t_C of the heat-conveying fluid at its outlet from the heat storage chamber; and

controlling said controllable means to ensure that the heat-conveying fluid circulates from the heat source and through the heat storage chamber whenever t_A exceeds t_B and t_B exceeds t_C, and to stop circulation of said heat-conveying fluid, at least through the heat storage chamber, if the temperature t_A becomes lower than the temperature t_B, or the temperature t_B becomes lower than or equal to the temperature t_C.

4,353,411

ARCHITECTURAL SUPPORT AND SERVICE ASSEMBLY

James L. Harter, 3131 Diamond Ave., Allentown, Pa. 18103, and Joseph E. Biro, Crescendo, Wittman, Md. 21676

Filed Feb. 4, 1980, Ser. No. 118,440
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—48 R **2 Claims**

1. A dual-purpose, modular service assembly for use in a room having a moveable, accessible subsurface HVAC supply system, which assembly provides support to modular partition structures erected in said room and also provides discretely-controlled HVAC fluid service to the area adjacent to said structures in response to varying, local conditions and demands, said assembly comprising:

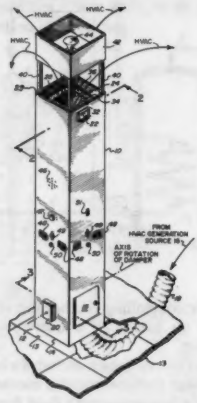
(a) a hollow, portable modular support and HVAC service column having an interior channel extending longitudinally therethrough and adapted to carry HVAC fluid introduced into said channel through an inlet port at its base, said inlet port being releasably connected to said HVAC supply system;

(b) an exhaust port integral to said channel and communicat-

ing with the exterior of said column for venting the HVAC fluid from said channel to area adjacent to the exterior of said column;

(c) deflector means integral with said channel and column and in a relatively close spatial relation with said exhaust port so that it opposes the HVAC exiting from said channel and directs it radially outward from a central point in the channel;

(d) a fluid control means integral with said channel and positioned between said inlet port and exhaust port for discretely controlling the rate at which HVAC flows through said channel by opening and closing access therethrough, thereby controlling the rate at which HVAC fluid is exhausted from said column;



(e) fastening means integral with said column for releasably mounting the base thereof to a floor of said room at any one of a plurality of access points at which the moveable, accessible subsurface HVAC supply system can be located, so that the column will stand in fixed, rigid, semi-permanent connection to said floor and the inlet port of the channel is positioned for releasable attachment to the HVAC supply system beneath the floor;

(f) second fastening means for releasably connecting said inlet port to said HVAC supply system so that HVAC fluid can be carried from said supply system to the inlet port of said channel; and

(g) supplementary conditioning means, integral with said column, for locally adjusting the temperature and humidity of said HVAC fluid after it has been supplied to the inlet port of said column.

4,353,412

HEATING AND COOLING SYSTEM

Mark U. Krumhansl, 1811 Bent Twig, Tustin, Calif. 92680

Filed Feb. 19, 1980, Ser. No. 122,117

Int. Cl.³ F24F *13/02*

U.S. Cl. 165—59 **9 Claims**

1. For transferring heat to and from a given place, in combination:

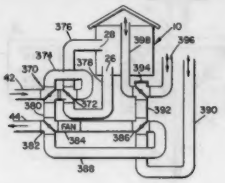
a heat pump of the kind that transfers heat to and from liquid at the source side and that transfers heat from and to air at the output side, each of the source side and output side including a flow inlet and a flow outlet;

means for connecting said heat pump to a liquid heat sump at its source side; and

an air flow control system connected to said heat pump at its output side;

said air flow control system comprising a four-port air flow control valve and a primary flow path extending from the flow outlet at the output side of said heat pump through said valve to the flow inlet at the output side of said heat pump;

said air flow control system further comprising a secondary flow path in the form of first and second flow conduits each connected to a respectively associated port of said valve and each including means in the form of a flow opening for delivering air to said given place;



said valve including a flow diverter and being effective as a consequence of change in position of the diverter to selectively isolate the primary flow path from the secondary flow path or to include the secondary flow path in series with said primary flow path.

4,353,413

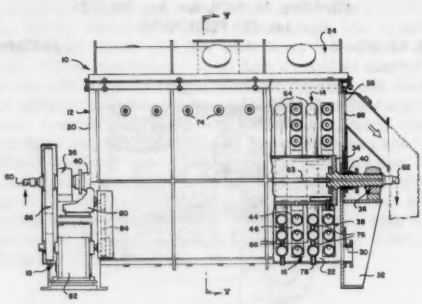
RENDERING DRYER

William M. Allen, and Gordon C. Trabue, both of Louisville, Ky., assignors to Chemetron Process Equipment, Inc., Louisville, Ky.

Filed Sep. 8, 1980, Ser. No. 184,710

Int. Cl.³ F28D *11/04*

U.S. Cl. 165—92 **11 Claims**



1. A dryer for processing hydrous animal material in slurry form, said dryer comprising:

a hollow elongate vessel having an inlet and an outlet, and presenting an enclosed, material-receiving chamber;

a heat transfer rotor in said chamber, said rotor including a shaft rotatably mounted on said vessel for rotation about an axis extending generally longitudinally of the vessel and an axially extending series of spaced, annular heat exchange vanes secured to the shaft for rotation therewith;

a heat transfer stator secured to said vessel within said chamber in cooperable relation to said rotor,

said stator including a series of spaced, stationary heat exchange banks interleaved with said series of heat exchange vanes on said rotor;

means for circulating heat transfer fluid through said vanes and said banks; and

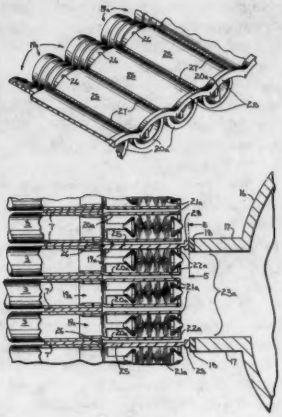
a drive for rotating said rotor whereby relative movement between said vanes and said banks is effected for enhanced heat transfer to material in the chamber.

4,353,414

HEAT EXCHANGER TUBE CLEANING

Gordon F. Leitner, Elm Grove, Wis., assignor to Water Services of America, Inc., Milwaukee, Wis.

Filed Aug. 21, 1980, Ser. No. 178,131
Int. Cl.³ F28G *15/02*
U.S. Cl. 165—95 9 Claims



1. For use in a heat exchanger having a plurality of fluid flow tubes arranged with exposed open ends and wherein a fluid counter-flow arm is disposed adjacent and facing said open ends for movement thereacross, a tube cleaning element comprising:

(a) a generally cylindrical cage-like basket forming a chamber holding a cleaning member adapted to pass through a tube during counter-flow of fluid therethrough,

(b) means on said basket for placing said basket in fluid communication with the interior of a said tube,

(c) and means on said basket for cooperating with similar last-named means on adjacent baskets for forming a boundary in said plurality of tubes for use in compartmentalizing the latter,

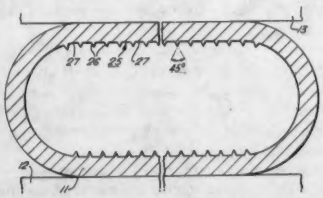
(d) the construction being such that said boundary-forming means is adapted to register with the said arm as the latter moves across the tubes.

4,353,415

HEAT PIPES AND THERMAL SIPHONS

John T. Klaschka, Fleet, and Michael J. Davies, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 24, 1980, Ser. No. 171,791
Claims priority, application United Kingdom, Jul. 30, 1979, 7926436
Int. Cl.³ F23D *15/00*
U.S. Cl. 165—104.21 12 Claims



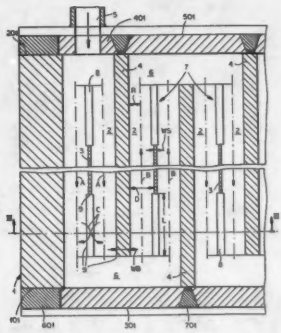
1. A heat conductive device in the form of a thermal siphon comprising, a chamber having an evaporation portion thereof where heat is to be applied to the chamber and a condensation portion thereof where heat is to be extracted from the chamber, and a vaporizable liquid in the chamber, the evaporation portion of the chamber having a surface provided with a plurality of grooves of a shape and dimensions such as to promote thin film evaporation therefrom of condensate of the liquid without effecting capillary flow of the condensate along the grooves.

4,353,416

PRESS PLATE FOR PLATEN PRESSES

Herbert R. Buschfeld, Kaarst, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,666
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007493
Int. Cl.³ B30B *15/06;* F28F *3/12*
U.S. Cl. 165—168 6 Claims



1. A heating press plate for a platen press comprising:

a plate body formed with a plurality of pairs of bores in mutually parallel spaced-apart relationship with the bores of each pair separated by respective thin walls and the adjoining pairs of bores separated by thick walls;

means for feeding a heating fluid to a first pair of bores;

means forming connecting chambers between adjoining pairs of bores alternately on opposite sides of said plate whereby said fluid flows in succession through the bores of successive pairs and codirectionally through the bores of each pair but in opposite directions through the bores of adjoining pairs; and

means forming mixing zones enabling communication between the bores of each pair upstream and downwstream of each of said chambers.

4,353,417

METHOD FOR PRODUCING A WELL IN AN UNCONSOLIDATED FORMATION

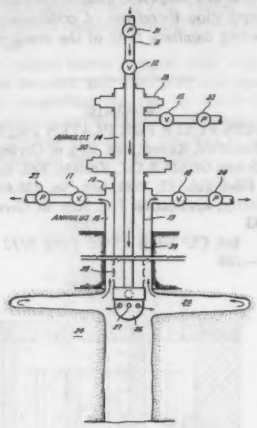
Richard H. Widmyer, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,875
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—250 19 Claims

12. A method for producing a well in an unconsolidated formation while preventing cave-in and sloughing during working in the well wherein the well has a tube supported screen extending down to the bottom thereof with a wash tube centered in the screen extending from a source of high pressure drilling fluid to a horizontal nozzle at the bottom of the screen for washing out an enlarged cavity wherein an inner annulus is formed between the wash pipe and the screen and an outer annulus is formed between the screen and the well walls and

there being valves for controlling fluid flow through both annuli and the wash pipe comprising the step of,

(a) controlling the valves in both annuli for controlling the exhaust spent fluids and removed formation material from



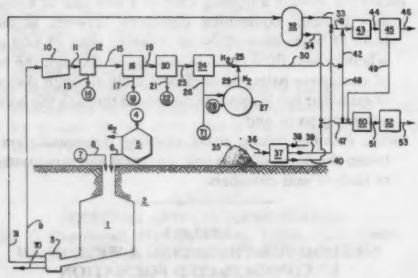
the outer annulus as it flows up from the cavity for maintaining a high fluid pressure against the walls of the cavity higher than the overburden pressure in the walls for preventing cave-in and sloughing of the unconsolidated formation well walls.

4,353,418

IN SITU RETORTING OF OIL SHALE

Gerald B. Hoekstra, South Holland, and David R. Christian, Lisle, both of Ill., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 198,850
Int. Cl.[3] E21B *43/247, 43/34, 43/38*
U.S. Cl. 166—259 **9 Claims**



1. A method for processing oil shale, comprising the steps of:

establishing an underground in situ retort containing a mass of rubblized matter comprising oil shale;

establishing a flame front within said mass of oil shale to liberate water and shale oil containing arsenic, nitrogen and sulfur from said oil shale and form combustion off-gases containing hydrogen, sulfur, carbon dioxide and shale oil;

passing a gaseous mixture of oxygen and a diluent selected from the group consisting of steam, carbon dioxide and combustion off-gases into said underground retort to support said flame front;

withdrawing said shale oil, water and combustion off-gases from said underground retort;

substantially separating said withdrawn shale oil, water and combustion off-gases in an underground separation zone;

deoiling said combustion off-gases in a deoiling zone to remove a substantial amount of said shale oil from said combustion off-gases;

desulfurizing said combustion off-gases to remove a substantial amount of said sulfur from said combustion off-gases;

removing a substantial amount of said carbon dioxide from said combustion off-gases;

recovering a substantially purified gas stream of hydrogen from said combustion off-gases;

separating said shale oil from said underground retort into fractions including a fraction of light shale oil and a fraction of heavy shale oil;

injecting a portion of said purified gas stream of hydrogen into said fraction of light shale oil;

injecting another portion of said purified gas stream of hydrogen into said fraction of heavy oil;

removing a substantial amount of said arsenic from said fraction of light shale oil in a first reactor;

removing a substantial amount of said arsenic from said fraction of heavy shale oil in a second reactor;

hydrotreating said fraction of light shale oil and removing a substantial amount of said nitrogen and said sulfur from said fraction of light shale oil in a hydrotreating zone; and

hydrocracking said fraction of heavy shale oil and removing a substantial amount of said nitrogen and said sulfur from said fraction of heavy shale oil in a hydrocracking zone.

6. A method for processing oil shale, comprising the steps of:

establishing a flame front in an underground retort containing a rubblized mass of oil shale;

liberating shale oil and water from said oil shale with heat generated from said flame front;

emitting combustion off-gases from said flame front;

feeding an oxygen containing gas consisting essentially of 90% by weight oxygen into said retort to support said flame front;

stopping feeding of said oxygen containing gas;

injecting steam into said retort after said feeding is stopped for minimizing burning of said shale oil; and

withdrawing said shale oil, water and combustion off-gases from said retort.

4,353,419

METHOD FOR MANUFACTURING A WELL PRODUCTION AND SAND SCREEN ASSEMBLY

Richard H. Widmyer, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,876
Int. Cl.[3] E21B *34/02, 43/04, 43/10*
U.S. Cl. 166—379 **9 Claims**

1. A method for manufacturing a screen assembly in a well in unconsolidated sand formation while preventing cave-in and sloughing in the well comprising,

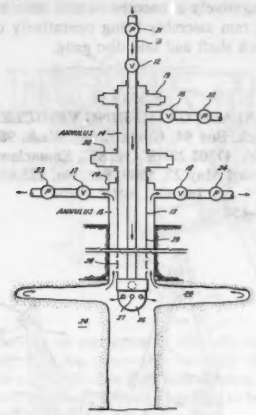
(a) supporting a screen on a tubing for lowering into the well wherein the tubing forms an outer annulus between the tubing and the walls of the well,

(b) lowering a wash pipe centrally of the screen and its supporting tubing for forming an inner annulus between the wash pipe and the screen,

(c) connecting a high pressure fluid source means at the surface to each of the wash pipe, inner annulus, and outer annulus, and

(d) interconnecting valve means to each of said wash pipe, inner annulus, and outer annulus in fluid communication with the high pressure fluid source means for controlling the ingress and egress of the high pressure fluid for maintaining a constant high fluid pressure against the walls of

the well greater than the overburden pressure therein during work therein for preventing the cave-in and



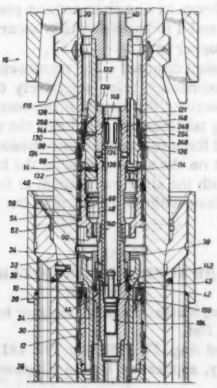
sloughing of the unconsolidated formation well walls until a sand pack is formed between the screen and the walls.

4,353,420

WELLHEAD APPARATUS AND METHOD OF RUNNING SAME

Henry W. Miller, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 31, 1980, Ser. No. 202,594
Int. Cl.³ E21B *23/02, 23/06, 33/03*
U.S. Cl. 166—382 **15 Claims**



1. A well apparatus comprising

a hanger body having a downwardly facing external shoulder adapted to land on a well housing landing seat, an external flow passage for the flow of fluids past the landing shoulder and around the exterior of the hanger body and a seal surface above said shoulder,

a packer assembly having a mandrel with a lower sealing means adapted to engage and seal against said seal surface on said hanger body, a packing ring, means supporting said packing ring on said mandrel, an actuating sleeve surrounding said mandrel and adapted to move said packing ring into sealing engagement between said mandrel and the interior of the well housing, means for releasably holding said sleeve from movement, and means for securing said mandrel in set position to the interior of said housing,

a running tool having means for releasably engaging said hanger body and for releasably engaging said packer assembly whereby, as said tool is run into the well housing and said hanger seats on the housing landing seat, the packer assembly is moved into sealing engagement with said hanger body and with said housing and said tool may be recovered with said hanger body and packer assembly remaining the well housing,

said running tool is disengaged from said hanger body prior to the movement to set said packer assembly,

said running tool is disengaged from said packer assembly with setting movement of said running tool, and

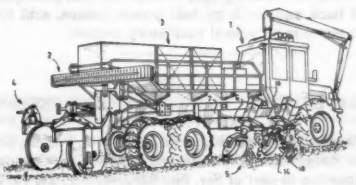
means on said running tool for re-engaging said packer assembly for the recovery of said packer assembly on said running tool in the event said packer assembly does not seal satisfactorily within said well housing.

4,353,421

SOIL PREPARING DEVICE FOR PREPARING FOREST SOIL

Lasse Lahti, Mänttä, Finland, assignor to G. A. Serlachius Oy, Mantta, Finland

Filed Jan. 16, 1980, Ser. No. 112,615
Claims priority, application Finland, Jan. 18, 1979, 790162
Int. Cl.³ A01B *33/00, 61/00*
U.S. Cl. 172—5 **5 Claims**



1. A soil preparing device for preparing forest soil to a planting bed, said device comprising a soil-engageable preparing element, a frame, at least one support arm mounted on said frame for pivotal movement around a horizontal pivot as the preparing element moves along the ground during a preparing operation; a slide supporting the preparing element and mounted on said support arm for vertical adjustment in relation to said arm, characterized in that said slide is fastened to a displacing means supported by said support arm, for rectilinear vertical adjustment of said preparing element with respect to said support arm in a direction perpendicular to said arm during the soil preparation, said displacing means being arranged to push said slide downward and to pull the slide upward, respectively, as said support arm pivots downward and upward, respectively, as a result of forces applied to said preparing element by an obstacle in the ground as the device is moved along the ground.

4,353,422

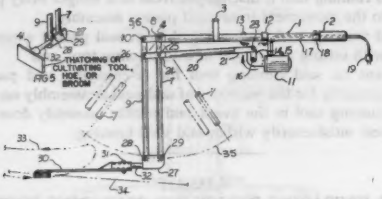
HAND HELD POWER MACHINE WITH OSCILLATING TOOL

James H. Bennett, Jr., 1013 Cowpens Rd., Towson, Md. 21204

Filed Mar. 26, 1980, Ser. No. 134,076
Int. Cl.³ A01B *1/22*
U.S. Cl. 172—41 **9 Claims**

1. A hand-held power machine for aiding an operator in performing work, said machine comprising a main support member, said main support member being provided with handle means to facilitate the holding of said machine by the operator thereof, power means attached to said main support member, a connecting means connected to said power means, said connecting means comprising crank means operated by

said power means, a push-pull rod attached to said crank means, said rod extending generally parallel to said main support means and being moved back and forth relative to said main support means by said crank means as said crank means is operated by said power means, a first link pivotally mounted on one end thereof to one end of said main support member, a second link pivotally mounted on one end thereof to said one end of said first link and said one end of said main support member, a third link pivotally mounted on one end thereof to the opposite end of said first link, said second link and said



third link being pivotally connected to said push-pull rod at longitudinally spaced locations along said rod, said locations being spaced sufficiently such that along with the spacing of said second link and said third link by said first link, said second link and said third link are maintained generally parallel to each other, the other end of said second link and the other end of said third link being pivotally connected to a tool holding link at spaced locations on said tool holding link, a tool attached to said tool holding link, whereby as said push-pull bar is moved back and forth by said power means, said tool is caused to move in a cyclical oscillatory motion.

4,353,423

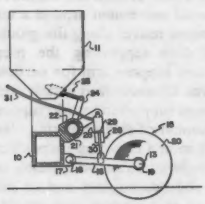
HYDRAULIC RESET FOR TILLAGE AND SEEDING EQUIPMENT

Erhard Poggemiller, Luseland, and Ralph Sweet, Forgan, both of Canada, assignors to Kep Enterprises, Luseland, Canada

Continuation-in-part of Ser. No. 835,049, Sep. 21, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,399

Int. Cl.³ A01B *61/04, 63/32*

U.S. Cl. 172—260.5 **4 Claims**



1. In an agricultural implement which includes a frame, and a ground engaging tool assembly pivotally supported upon said frame, an hydraulic system including a variable displacement pump, a high pressure line extending from said pump, a main hydraulic ram operatively connected to said high pressure line and to said ground engaging tool assembly for controlling and presetting the depth of penetration of said ground engaging tool assembly; the improvement comprising in combination a resetting ram assembly for said ground engaging tool assembly, operatively extending between said ground engaging tool assembly and said frame, means operatively connecting said resetting ram assembly to the hydraulic system and means to adjust the hydraulic pressure within said resetting ram assembly below pump pressure whereby said resetting ram assembly is normally fully extended until a predetermined pressure upon said ground engaging tool assembly is exceeded, said last mentioned means comprising a pressure reducing valve assembly operatively connected between said high pressure line and said resetting ram assembly to control and sense the pressure downstream of said valve assembly, said ground engaging tool assembly including at least one disc gang mounted for pivotal action to said frame, a rock shaft assembly mounted on said frame and operatively connected to said main hydraulic ram, said resetting ram assembly being operatively connected between said rock shaft and said disc gang.

4,353,424

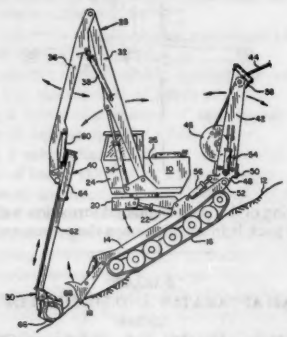
SLASH GATHERING VEHICLE

Ray B. Schenck, Box 94, Grays River, Wash. 98621, and Wilhelm Schmidt, 47502 288th Ave. SE., Enumclaw, Wash. 98022

Filed May 27, 1980, Ser. No. 153,412

Int. Cl.³ A01B *49/04*

U.S. Cl. 172—438 **5 Claims**



1. A slash gathering vehicle comprising:

a chassis;

traction means supporting the chassis for movement along a steep logging slope;

an elongated boom having an upper arm pivotally carried by the chassis and a forearm pivotally secured to the remote end of the upper arm;

a slide mechanism disposed at the remote end of the forearm, the slide mechanism being selectively extendable to increase or decrease the length of the boom; and

an articulating tail boom for stabilizing the vehicle by applying a lateral force to a cable under tension anchored to an uphill point on the slope to enable the boom to reach to one side with the slide mechanism at full extension for gathering slash without overturning the vehicle.

4,353,425

GUIDE TUBE SUPPORT FOR ROTARY IMPACT HAMMER

Frank F. Simpson, Staines, England, assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 27, 1980, Ser. No. 181,819

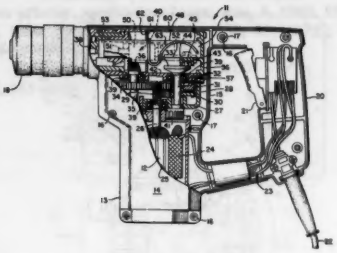
Claims priority, application United Kingdom, Aug. 31, 1979, 7930272

Int. Cl.³ B25D *11/06, 17/24*

U.S. Cl. 173—109 **14 Claims**

1. In a combination rotary and percussive portable tool driven by prime motive means wherein the percussive means includes a reciprocating cylinder in a housing having embodied therein a reciprocatable piston striker which imparts percussive shocks, the cylinder being adapted and constructed to be reciprocated in a guide tube by crank means operatively positioned alongside the cylinder, the guide tube being mounted in the housing and having a cutaway section from one end portion for a distance to thereby avoid the eccentric crank means when said cylinder is operated, the housing being in surrounding spaced relationship to the guide tube, the improvement comprising:

an annular wall secured internally of said housing and concentrically around said guide tube at a point beyond said cutaway section; a spring positioned between said annular wall and affixed to one end portion of said guide tube, said



housing having an end opening whereby the guide tube and spring may be removably inserted therein; and a removable cap mountable over said opening, the inwardly facing portion of said cap being adapted to be an abutment for said end portion of said guide tube.

4,353,426

PERCUSSIVE TOOLS

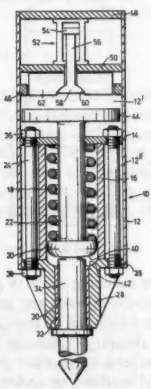
Richard Ward, Worsley, England, assignor to Dobson Park Industries Limited, England

Filed Aug. 15, 1980, Ser. No. 178,280

Claims priority, application United Kingdom, Aug. 17, 1979, 7928787

Int. Cl.³ B25D *9/04*

U.S. Cl. 173—119 **15 Claims**



1. A percussive tool comprising:

(i) a tool body

(ii) an impacting mass reciprocable with respect to said tool body in first and second opposed directions

(iii) spring means positioned to act between said body and said mass to drive said mass in said second direction for delivering impact to a tool,

(iv) retractor means positioned to act between said body and said mass, to drive said mass in said first direction,

(v) magnetic coupling means for coupling said retractor means to said mass during movement in said first direction until a predetermined loading of said spring means is attained whereupon said coupling is released, said magnetic coupling means including a first part on said retractor means and a second part on said mass, at least one of said parts including a permanent magnet, and a magnetic flux diverter into operative proximity with which said permanent magnet is moved upon attainment of said predetermined loading.

4,353,427

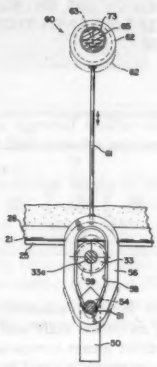
WEIGHT-SENSOR CALIBRATION FOR GRAVIMETRIC COAL FEEDER

Arthur J. Stock, Lakewood, and Donald S. Christopher, Willowick, both of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio

Filed Sep. 26, 1980, Ser. No. 190,963

Int. Cl.³ G01G *19/52, 11/14;* G01L *25/00*

U.S. Cl. 177—50 **8 Claims**



1. A device for selectively applying a test load to a weight-sensing mechanism that includes means for continuously sensing the weight of a variable operating load and means for generating a signal representative of the weight sensed by said means, said device comprising:

a calibrating weight;

a control shaft located above said weight sensing mechanism,

at least one vertical support rod operatively connected to said control shaft at its upper end and connected to said calibrating weight at its lower end, and

means for rotating said shaft about its axis between a first position wherein said calibrating weight is supported by said vertical rod and a second position wherein the weight of said calibrating weight is transferred to said weight sensing mechanism.

4,353,428

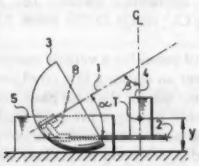
SUSPENSION OF VEHICLES FOR RUGGED TERRAIN

Josef Kovar, and Milos Suchy, both of Praha, Czechoslovakia, assignors to Ustav pro vyzkum motorvych vozidel, Praha, Czechoslovakia

Filed Mar. 11, 1980, Ser. No. 129,220

Int. Cl.³ B62D *57/00*

U.S. Cl. 180—7 R **4 Claims**



1. In a suspension of a travel gear for vehicles adapted to

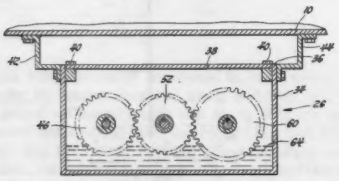
travel over rough terrain, the travel gear having the shape of a body of revolution and being supported on a primary axle and mounted for idle revolution about a secondary axle connected to a vehicle frame, the improvement wherein the angle α between the primary and secondary axles is less than 90°, and including a reference plane τ perpendicular to a horizontal support plane for said vehicle passing through the longitudinal axis thereof, at least one of said primary and secondary axles making an angle β of less than 90° with said reference plane τ.

4,353,429

OVERDRIVE UNIT FOR AUTOMOTIVE VEHICLE

Lonnie L. Herron, 1517 Berkshire, Westland, Mich. 48185

Filed May 19, 1980, Ser. No. 150,720
Int. Cl.³ B60K *17/00*; F16H *57/02*
U.S. Cl. 180—70 MS **1 Claim**



1. In combination with an automotive vehicle having a transmission having an output shaft, and a differential having an input shaft, overdrive means comprising:

a housing and means mounting said housing on said vehicle between said transmission and said differential, the housing having an open top, and including a cover mounted on the top in a position between the housing and the bottom of the vehicle, and bracket means supporting the housing in a position sufficiently beneath the vehicle bottom to permit removal of the cover;

a first spur gear mounted in the housing and connected to the transmission output shaft to rotate therewith;

a second spur gear mounted in the housing and meshed with the first spur gear so as to rotate therewith, but in the opposite direction;

a third spur gear mounted in the housing and meshed with the second spur gear to rotate therewith in the same direction as the first spur gear, and means connecting said third spur gear to the input shaft of the differential;

the first spur gear, the second spur gear, and the third spur gear being supported on parallel axes of rotation beneath the body of the vehicle, said axes being substantially an equal distance beneath said vehicle body.

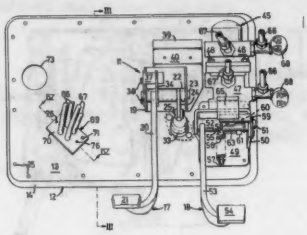
4,353,430

ARRANGEMENT FOR FITTING A PEDAL ARRANGEMENT IN A VEHICLE

Carl D. I. Sjöqvist, Järna, and Tage E. Söderberg, Stockholm, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Jan. 11, 1980, Ser. No. 111,294
Claims priority, application Sweden, Jan. 16, 1979, 7900373
Int. Cl.³ B62D *25/20*; B60K *37/04*
U.S. Cl. 180—90 **3 Claims**

1. A foot control panel for a vehicle comprising a base plate for connection over an opening in a cowl panel, a brake cylinder mounted on one side of the base plate, the cylinder including a valve assembly having a pressure fluid inlet and a pressure fluid outlet; at least one movable brake pedal mounted on the base plate and operatively associated with the cylinder; a pressure fluid connection block comprising two block halves mounted on opposite sides of the base plate; first and second conduits connecting the inlet and the outlet of the brake cylinder with the block half which is mounted on the same side of the base plate as the brake cylinder; and third and fourth conduits connected to the other block half, said third conduit being adapted for connection to the vehicle wheel brakes and



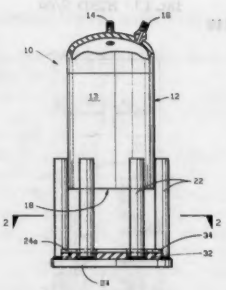
said fourth conduit being adapted for connection to a source of fluid pressure, said two block halves placing said fourth conduit in communication with said first conduit and placing said third conduit in communication with said second conduit.

4,353,431

RECOIL REDUCING SYSTEM FOR GAS GUNS

Robert A. Kirby, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jun. 30, 1980, Ser. No. 164,631
Int. Cl.³ G01V *1/02*
U.S. Cl. 181—118 **10 Claims**



1. An apparatus for reducing recoil of gas gun for generating pulses in a liquid medium, said gas gun including a barrel which holds gas and which has an outlet, said gas gun further including means for abruptly increasing the pressure of the gas in the barrel so that at least some of the gas escapes through the outlet into the liquid medium to create a pulse therein, said apparatus comprising:

a reaction plate having a face;

means for connecting the reaction plate to the barrel in such a manner that the reaction plate is disposed outside the barrel and adjacent to and spaced from the outlet, so that at least some of the gas escaping through the outlet impinges upon said face of the reaction plate to reduce recoil of the barrel caused by the escaping gas;

a layer of shock absorbent material interposed between said face and the outlet to absorb some of the energy of the impinging gas, so that the amounts of bending of the reaction plate and of the connecting means caused by the impinging gas are reduced; and

a protection plate interposed between said shock absorbing layer and the outlet, so that at least a part of said layer is protected from direct impact by the impinging gas.

4,353,432

ELECTRO-DYNAMIC SPEAKER

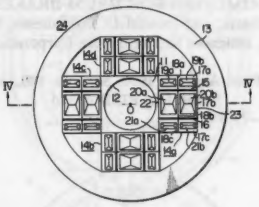
Mitsuhiro Hasegawa, Nishinomiya; Hiroyuki Takewa, Kaizuka, and Hiroshi Yamamoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 7, 1981, Ser. No. 291,115

Claims priority, application Japan, Aug. 9, 1980, 55-109408; Aug. 9, 1980, 55-109409; Sep. 17, 1980, 55-132757; Oct. 20, 1980, 55-150022; Feb. 5, 1981, 56-15876

Int. Cl.³ G10K *13/00*

U.S. Cl. 181—166 7 Claims



1. An electro-dynamic speaker comprising a damper which includes a polygonal central supporting portion having an aperture for fixedly receiving a coil bobbin, a plurality of flexural tubes each having a quadrilateral cross-sectional shape and connected to each side of said central supporting portion through a bend, and an outer peripheral supporting portion connected to the outer ends of said flexural tubes through respective bends.

4,353,433

DAMPING COVERING

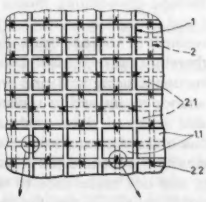
Michael Mohrenstein-Ertel, Deisenhofen, and Helmut Albrecht, Miesbach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,741

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013861

Int. Cl.³ F16F *7/00*

U.S. Cl. 181—207 8 Claims



1. A sound damping covering for solid, permanent or temporary attachment to surfaces of a body to be damped, comprising platelet elements of a high elasticity, which are arranged substantially next to each other and are staggered in two or more layers, a material for the conversion of shear stresses into heat located between the layers, wherein at least the platelet elements of both outer layers, as well as within one layer and also at least partially between the layers, are connected with each other, and wherein a play clearance is provided at least between certain platelet elements within the covering.

4,353,434

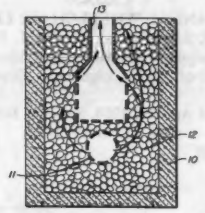
FLUID BLOW-OFF MUFFLER

Thomas R. Norris, 15 Patricia Rd., Orinda, Calif. 94563

Filed Mar. 30, 1981, Ser. No. 249,218

Int. Cl.³ F01N *1/24*

U.S. Cl. 181—258 10 Claims



1. In a particle-fill, blow-off muffler for use in passing a stream of pressurized fluid into the atmosphere, the improvement comprising:

a housing having sufficient height to accommodate, under the influence of said stream, a non-surging particle-fill; and a void volume having a volume in the range of from about 3 to 49 percent of the volume surrounded by said housing and being defined by a shell containing holes or openings communicating with said fill, said void volume being adapted to pass to the atmosphere at least one-third of said stream after passage through but a portion of said fill.

4,353,435

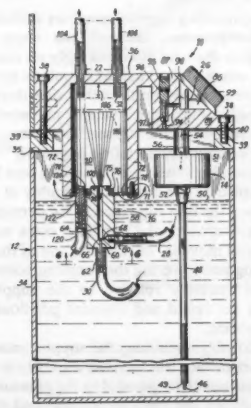
WIDE FLOW-RANGE LUBRICANT DISTRIBUTOR

Abraham Abrams, Roslyn Heights, and John J. Baumann, Medford, both of N.Y., assignors to Uniwave, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 60,423, Jul. 25, 1979, abandoned. This application Jun. 16, 1980, Ser. No. 157,601

Int. Cl.³ F01M *1/16*

U.S. Cl. 184—6.26 41 Claims



18. A distributor for feeding a lubricant comprising:

lubricant supply means having an outlet;

lubricant transmission means having at least two inlets spaced from said outlet by a gap, said lubricant supply means being positioned and adapted to project a pressurized lubricant stream from said outlet in an upward direction across said gap; and

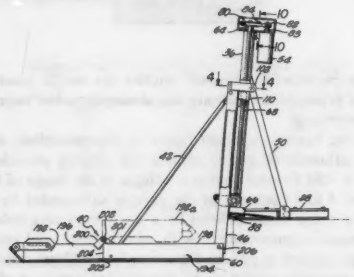
means supporting said at least two lubricant transmission means inlets so that each of said transmission means inlets face and are at least in part in the path of at least a portion of the lubricant stream, and so that said lubricant transmission means inlets face downwardly.

4,353,436

MANUAL WHEELCHAIR LIFT

Leonard L. Rice, Los Angeles; Marlin J. Freel, San Dimas; Gregory J. Paquin, Northridge, and Howard E. Burkett, Culver City, all of Calif., assignors to Ricon Corp., Sun Valley, Calif.

Filed Apr. 16, 1980, Ser. No. 140,928
Int. Cl.³ B60P *1/46*
U.S. Cl. 187—9 R **21 Claims**



1. A lift apparatus for being mounted to a first support surface adjacent the threshold of an access opening thereof for being selectively located at a storage position and an operating position, the lift apparatus operable for moving an object such as a wheelchair between a raised position generally horizontal with the first support surface, and a lowered position below the first support surface and adjacent a second support surface when the lift apparatus is in the operating position, the lift apparatus comprising:

a movable support assembly comprising:

a base plate assembly;

a pair of upstanding support members defining a passageway therebetween, one of the support members mounted to the base plate assembly on one side thereof and the other of the support members mounted to the base plate assembly on the other side thereof;

a pair of lead screws, each rotatably mounted between the ends of the one of the support members;

a platform assembly having a first edge;

a pair of coupling posts, each coupling post having a first end coupled to the platform assembly at spaced locations along the first edge thereof for permitting passageway therebetween, the coupling posts each having a second end movably attached to one of the lead screws for raising and lowering the coupling posts to move the platform assembly relative to the support members between the raised and lowered positions as the lead screws rotate;

means for movably mounting the support assembly to the first support surface, the support assembly being movable in a plane substantially parallel to the plane of the support surface between the storage position and the operating position whereby the platform assembly extends over the threshold of the access opening with the first edge of the platform assembly being parallel to the threshold of the access opening when the support assembly is in the operating position and the platform assembly is in the raised position; and

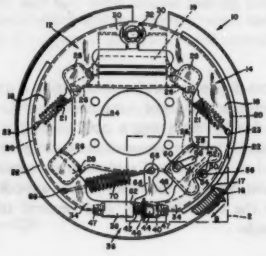
means for selectively, simultaneously, rotating the lead screws for raising and lowering the platform assembly between the raised and lowered positions when the support assembly is in the operating position.

4,353,437

ADJUSTER FOR DRUM BRAKES

James K. Roberts, and Donald D. Johannesen, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 22, 1980, Ser. No. 180,533
Int. Cl.³ F16D *65/46*
U.S. Cl. 188—79.5 GE **2 Claims**



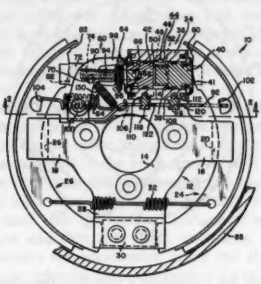
1. A drum brake comprising a brake drum and a pair of brake shoes engageable with the drum to retard rotation of said drum, a backing plate carrying said pair of brake shoes and including an anchor means for receiving braking torque from said pair of brake shoes, an extendible member which spaces apart said pair of brake shoes to maintain a running clearance between the brake shoes and the brake drum in the non-braking condition, each of said brake shoes pivotally engaging said anchor means, a lever pivotally connected to one of said brake shoes and engaging said extendible member to elongate said member, resilient means extending between said lever and the other of said pair of brake shoes for urging said pair of brake shoes into engagement with said extendible member, said resilient means yieldably pivoting said lever so as to elongate said extendible member, characterized in that said backing plate and said lever include cooperating means for pivoting said lever relative to said extendible member upon radial and circumferential movement of said one brake shoe relative to said backing plate, whereby a brake actuation with the brake drum rotating in a direction causing said one brake shoe to pivot relative to said anchor means and to transmit braking torque thereto causes said lever to remain substantially stationary relative to said one brake shoe and said extendible member, a brake application with the brake drum rotating in the reverse direction causing said one brake shoe to move radially outwardly and circumferentially in the direction of brake drum rotation, said cooperating means pivoting said lever relative to said extendible member to elongate said extendible member if said running clearance is greater than a predetermined value, said cooperating means including a slot defined by one of said backing plate and lever, said cooperating means further including a pin carried by the other of said backing plate and lever, said pin being slidably received in said slot, and said slot being curved, the curvature of said slot coinciding with an arc centered at the point of pivotal engagement of said one brake shoe with said anchor means.

4,353,438

ACTUATOR ASSEMBLY FOR A DRUM BRAKE HAVING AN EXTENDIBLE ASSEMBLY

James J. Colpaert, Granger, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1980, Ser. No. 193,224
Int. Cl.³ F16D 65/56
U.S. Cl. 188—79.5 GC 8 Claims



1. In a drum brake assembly having a pair of brake shoes movable by a wheel cylinder from a non-braking position to a braking position in engagement with a rotatable member, an extendible assembly disposed between and cooperating with the wheel cylinder and the pair of brake shoes to substantially maintain a predetermined clearance between the pair of brake shoes and the rotatable member and an actuator assembly cooperating with the extendible assembly to extend the latter in response to the clearance between the pair of brake shoes and the rotatable member being greater than the predetermined amount, characterized by said actuator assembly comprising an adjusting pawl in engagement with the extendible assembly and a connecting member in engagement with one of the pair of brake shoes to move in unison therewith and connected to a retraction spring to bias said pair of brake shoes to the non-braking position, said connecting member pivotally mounting said adjusting pawl at one end of said connecting member so as to space said adjusting pawl in relation to said wheel cylinder and said pair of brake shoes, and said connecting member being movably engaged with said wheel cylinder to guide the movement of said connecting member as the latter moves with one of said pair of brake shoes during a brake application.

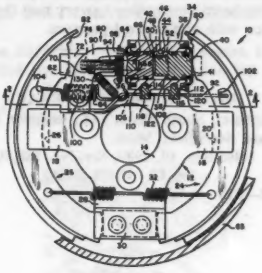
4,353,439

DRUM BRAKE WITH COMBINED ADJUSTER AND WHEEL CYLINDER

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1980, Ser. No. 193,238
Int. Cl.³ F16D 65/56
U.S. Cl. 188—79.5 GE 1 Claim

1. In a drum brake assembly having a pair of brake shoes engageable with a rotatable member to be braked, a wheel cylinder cooperating with the pair of brake shoes to move the latter into engagement with the rotatable member during a brake application, the wheel cylinder defining a bore for movably receiving a pair of pistons, and an extendible assembly cooperating with the pair of brake shoes to substantially maintain a predetermined clearance with the member to be braked, the wheel cylinder, the extendible assembly being disposed within a space between adjoining ends of said pair of brake shoes and including a star wheel rotatably disposed within the space, one of said pistons engaging one of said pair of brake shoes, the other of said pistons engaging said extendible assembly, said extendible assembly being disposed between said other piston and said other brake shoe, and said extendible assembly being operable to increase the space between said adjoining ends of said pair of brake shoes by moving said pair of pistons within said wheel cylinder away from said other brake shoe, characterized by said other piston including a portion extending outwardly of the wheel cylinder and including a blind bore receiving a portion of said star wheel in order



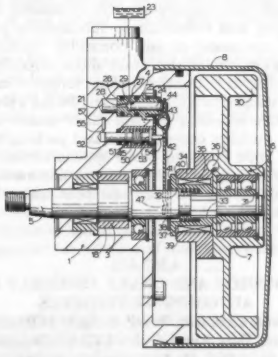
to rotatably support the latter adjacent the wheel cylinder, said one piston including a recess receiving a portion of said other piston to prevent rotation therebetween, and said one piston including a portion extending outwardly of the wheel cylinder to define a slot for receiving said one brake shoe.

4,353,440

SKID SENSING MEANS FOR HYDRAULIC ANTI-SKID BRAKING SYSTEMS

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 67,938, Aug. 20, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,105
Claims priority, application United Kingdom, Aug. 18, 1978, 33788/78
Int. Cl.³ B60T 8/16
U.S. Cl. 188—181 A 11 Claims



1. Skid sensing means for a vehicle antiskid braking system of the type comprising a brake, a supply of fluid under pressure for applying said brake, a brake pressure modulator for modulating the supply of fluid from said supply to said brake, and a brake-line through which said fluid is supplied to said brake from said modulator, said skid sensing means comprising a rotatable shaft a flywheel mechanism rotatable with said shaft, said flywheel mechanism comprising a flywheel member, a thrust member, and means responsive to relative angular movement between said members to cause one of said members to move axially relative to the other between a first position in which said members are in a predetermined angular alignment

and a second position in which the said one member engages said actuating means to actuate said modulator, said flywheel mechanism also including biassing means for producing a biassing force to urge the said one member towards said first position to determine a threshold setting of said flywheel mechanism, and wherein said biassing means incorporates means responsive at all times to a control pressure dependent upon pressure in said brake-line to vary said threshold setting in accordance with said control pressure.

4,353,441

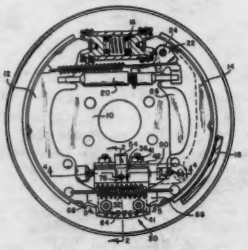
DUAL MODE DRUM BRAKE

James K. Roberts, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 19, 1980, Ser. No. 188,808

Int. Cl.³ F16D *51/20*

U.S. Cl. 188—328 **8 Claims**



1. In a drum brake assembly comprising a pair of brake shoes carried by a backing plate and engageable with a rotatable member to effect a service brake application, a parking lever cooperating with the pair of brake shoes to engage the latter with the rotatable member to effect a parking brake application, an anchor assembly carried by said backing plate between confronting ends of said brake shoes, said anchor assembly including a circumferentially-movable connector and a latch means engaging said connector to substantially prevent circumferential movement of said connector during a service brake application, one of said brake shoes pivotally engaging said connector so as to transfer braking torque to said backing plate via said connector and latch means during a service brake application, characterized by said latch means including a cam-defining member connected to said parking brake lever and movable upon a parking brake application to release said connector for circumferential movement, and means for transferring braking torque between said confronting brake shoe ends during a parking brake application.

4,353,442

BRAKE SHOE AND BRAKE ASSEMBLY FOR AUTOMOTIVE VEHICLES

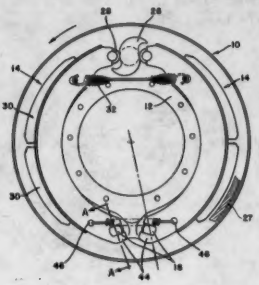
Flavio D. Correa, Campinas, Brazil, assignor to Bendix do Brasil Equipamentos Para Autoveiculos LTDA., Campinas, Brazil

Filed Oct. 15, 1979, Ser. No. 85,086

Int. Cl.³ F16D *65/09*

U.S. Cl. 188—330 **8 Claims**

1. In a brake, a drum mounted for rotation about an axis with a member to be braked, a support member mounted adjacent said drum, a pair of friction members carried by said support member in end-to-end relationship to present opposite pairs of contiguous ends, said friction members being movable relative to the support member to engage said drum when a brake application is effected, camming means carried by said support member and disposed between one pair of said contiguous ends of said friction members for urging said one pair of contiguous ends apart when a brake application is effected, said support member defining a pair of bores, each of said bores corresponding to a corresponding one of the other pair of contiguous ends of said friction members, a pair of cylindrical anchor pins, one of said anchor pins being rotatably mounted in each of said bores for rotation relative to the support member when a brake application is effected, and coupling means carried by said anchor pins and the other pair of said contiguous ends of said



friction member for providing a coupling between said anchor pins and the corresponding one of said other pair of contiguous ends preventing relative rotation between the friction members and the anchor pins wherein said pins are rotated relative to said support member when the friction members are urged into engagement with said drum.

4,353,443

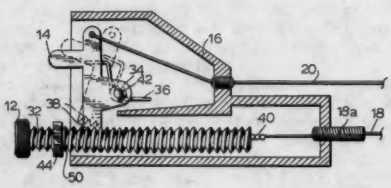
VEHICLE THROTTLE CONTROL

Richard S. R. Lombardo, 4425 20th St. W., Bradenton, Fla. 33507

Filed Apr. 21, 1980, Ser. No. 142,115

Int. Cl.³ B60K *41/20*

U.S. Cl. 192—3 T **2 Claims**



1. A device for setting the throttle linkage of a vehicle, the vehicle including a throttle, throttle linkage, an accelerator pedal, and a brake pedal, said device being useful for positioning the throttle linkage at a particular position for achieving cruise control of the vehicle such that the driver need not continuously depress the accelerator pedal, said device allowing for manual or brake pedal override of said throttle control, comprising:

a housing mountable to a portion of the vehicle at a location that is manually accessible by the driver of said vehicle, said housing including a hollow passage disposed between the front of said housing and the rear of said housing;

a rigid, threaded shaft mounted within the freely longitudinally and rotatably movable within said hollow passage of said housing;

a swiveling means connected to one end of said threaded shaft;

a cable connected at one end to said swiveling means and at the opposite end to said throttle linkage of said vehicle;

a manual grasping means disposed at the end of said threaded shaft opposite said swivel means and positioned outside of said housing, said manual grasping means being

accessible and manually actuable by the driver of said vehicle;

a lever arm pivotally connected within said housing, said lever arm having a first portion having a toothed surface with at least one tooth that is engagable with said threaded shaft for locking said shaft at a predetermined position within said housing, said lever arm including a portion protruding from the front of said housing manually accessible by said driver, said lever arm being movable by manual actuation for disengaging said toothed surface from said threaded shaft, said threaded shaft being rotatable when engaged with said lever arm toothed surface for minute longitudinal adjustment of said throttle linkage cable; and

a second cable, connected at one end to said lever arm and to said brake pedal at the opposite end of said second cable, said second cable being held in tension and its connection at one end to the lever arm at such a position on the lever arm such that depressing the brake pedal will cause the lever arm to be moved pivotally relative to said housing such that the toothed surface of said lever arm disengages said threaded shaft, unlocking said threaded shaft whereby the accelerator pedal and throttle linkage will thus be released from the tensioning of said threaded shaft.

4,353,444

TRANSMISSION WITH HYDRAULIC COUPLING DEVICE AND LOCKING CLUTCH SUITABLE FOR A MOTOR VEHICLE

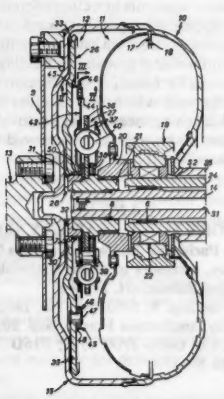
Jean E. Bionaz, Fontenay-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Mar. 31, 1980, Ser. No. 135,923

Claims priority, application France, Apr. 2, 1979, 79 08192

Int. Cl.³ F16H *45/02*; F16D *3/12*

U.S. Cl. 192—3.29 **14 Claims**



1. A hydraulic coupling device and a lock-up clutch unit for a motor vehicle, said unit comprising a hydraulic coupling device disposed in parallel between an input element for rotation with a driving shaft and an output element for rotation with a driven shaft, said hydraulic coupling device comprising an impeller fixed for rotation with said input element and a turbine fixed for rotation with said output element; a lock-up clutch comprising an axially displaceable coupling element fixed for rotation with said output element and frictionally couplable for rotation with said input element; torque transmitting means operatively connecting said coupling element and said output element, said torque transmitting means including a tab connection comprised of a plurality of leaf spring tabs disposed tangentially relative to a circumference of said unit, said tab connection defining a rotational connection while permitting limited axial displacement, whereby all the torque transmitted from said coupling element to said output element in the engaged position of said lock-up clutch passes through said tab connection.

4,353,445

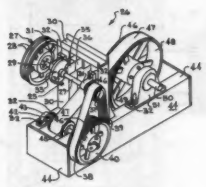
TOOTHED BELT DRIVE TRANSMISSION FOR PUMPING UNITS

Robert J. Moss, 6319 S. Inwood Rd., Shreveport, La. 71119

Filed Jun. 30, 1980, Ser. No. 164,780

Int. Cl.³ B60K *41/20*

U.S. Cl. 192—4 R **10 Claims**



1. A toothed belt drive transmission for oil field pumping units comprising:

(a) a frame;

(b) a first shaft journalled for rotation in said frame;

(c) a drive pulley carried by said first shaft in fixed relationship and cooperating with a drive means for rotating said first shaft at a selected speed;

(d) first sprocket means carried by said first shaft in spaced relationship from said drive pulley;

(e) a second shaft journalled for rotation in said frame and positioned beneath said first shaft and essentially parallel to said first shaft;

(f) second sprocket means carried by said second shaft in fixed relationship and in alignment with said first sprocket means, and a first endless sprocket belt cooperating with said first sprocket means and said second sprocket means to effect rotation of said second sprocket means responsive to rotation of said drive means;

(g) third sprocket means carried by said second shaft in spaced relationship from said second sprocket means;

(h) a third shaft journalled for rotation in said frame in essentially parallel relationship to said first shaft and said second shaft; and

(i) fourth sprocket means carried by said third shaft in fixed relationship and in alignment with said third sprocket means, and a second endless sprocket belt cooperating with said third sprocket means and said fourth sprocket means to effect rotation of said fourth sprocket means and said third shaft responsive to rotation of said drive pulley.

4,353,446

DEVICE FOR POSITIONING AND ATTITUDE-STABILIZING A SLEWABLE INERT/MASS/SUPPORTER ON ONE BASE

Joachim H. Wilken; Bernhard Stehlin, both of Ettlingen; Volker Pathe, Karlsruhe; Manfred Wamser, Karlsruhe, and Ludwig Pietzsch, Karlsruhe, all of Fed. Rep. of Germany, assignors to Ludwig Pietzsch, Ettlingen, Fed. Rep. of Germany

Filed Nov. 1, 1977, Ser. No. 849,380

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727582

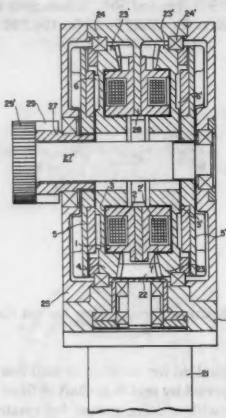
Int. Cl.³ G05D *3/00*; F41G *5/16*

U.S. Cl. 192—21 **46 Claims**

1. Device for positioning and attitude-stabilizing a slewable inert mass supported on a base, said device having at least two oppositely-directed rotatable driving parts supported on one of the base and the inert mass by means of at least one control device regulated in friction contact with compressible driven

parts, said driven parts being supported on the other of the mass and base, said control device having at least one electromagnetic clutch or brake in which the magnetic field is controlled by hyperexcitation of the exciting coil through feedback and intensification of the measured magnetic field strength.

24. Device for positioning and attitude stabilizing a slewable inert mass supported on a base, said device having at least two



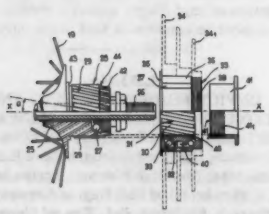
oppositely-directed rotatable driving parts supported on one of the base and the inert mass by means of at least one control device regulated in friction contact with compressible driven parts, said driven parts being supported on the other of the mass or base, said control device having at least one controllable electromagnetic clutch or brake in which the magnetic field is controlled by hyperexcitation of the exciting coil through feedback and intensification of the measured controlling torque.

4,353,447

CYCLE FREEWHEEL ASSEMBLY AND CYCLE WHEEL THEREFOR

Francis Bes, 36, rue Sere de Rivieres, Albi (Tarn), France

Filed Oct. 17, 1979, Ser. No. 85,805
Claims priority, application France, Oct. 3, 1979, 79 24649
Int. Cl.³ F16D *41/30*
U.S. Cl. 192—64 **6 Claims**



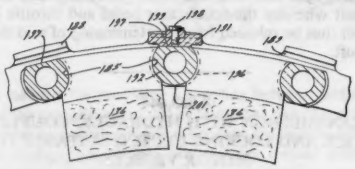
1. A cycle wheel engaged to an integral freewheel assembly, said assembly comprising a hub member with an axial opening therein, a gear means rotatably supported and secured to said hub member, a pawl arrangement operatively disposed between said gear means and said hub member, a spline means in said axial opening, said spline means extending the width of said hub member, said cycle wheel adapted to receive said freewheel assembly, said cycle wheel comprising a rim, a hub, means connecting said rim and said hub, and a spindle on which said hub is rotatably supported, said wheel hub having an external generally cylindrical portion provided with a spline means having a length sufficient to extend across a substantial portion of said axial opening and engage said axial opening spline means whereby said cylindrical portion and cylindrical portion spline means provides uniform support and a rotatable drive for said freewheel assembly, and means for axially securing said freewheel assembly to said hub member whereby disengagement of said securing means permits manual disengagement of said integral freewheel assembly as a unit from said hub member.

4,353,448

CLUTCH UNIT

Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Sommer Co., Warren, Mich.

Division of Ser. No. 849,858, Nov. 9, 1977, Pat. No. 4,223,774.
This application Jun. 23, 1980, Ser. No. 161,893
Int. Cl.³ F16D *13/68*
U.S. Cl. 192—70.13 **5 Claims**



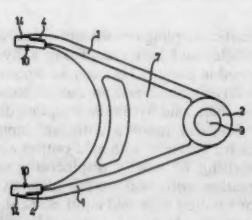
1. A clutch unit comprising an input shaft, an output shaft, a plurality of clutch discs connected to one of said shafts, a plurality of clutch plates interleaved with said discs and connected to the other shaft, said clutch discs extending outwardly from said clutch plates, each of said clutch discs comprising a plurality of arcuate segments in a circumferential arrangement, longitudinally extending supporting means for said clutch disc segments, co-acting portions on said supporting means and the edges of said clutch disc segments for holding the segments in position, and means for fastening said supporting means to said one of said shafts with which said plurality of clutch discs is connected, said fastening means being removable to permit one or more segments to be separately removed from said clutch unit without distrubing the other segments.

4,353,449

CONTROL FORK FOR A GEAR BOX SLIDING BLOCK

Jean M. Lamy, Paris, and Jacques Egret, Les Clayes-sous-Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 9, 1980, Ser. No. 185,591
Claims priority, application France, Sep. 20, 1979, 79 23443
Int. Cl.³ G05G *3/00, 9/12;* F16D *13/58*
U.S. Cl. 192—82 R **5 Claims**



1. A synchronization and clutch control fork for a gear box, the fork having outer lateral surfaces with notches therein and comprising two friction shoes mounted on the two arms of the

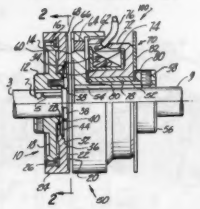
fork and intended to come into contact with the periphery of a driving gear, characterized in that each shoe comprises inside its lateral flanks two lugs which are snap-fit into the two notches in the outer lateral surfaces of the arms of the fork, the notches extending over the entire height of the arms of the fork, each shoe further comprising edges flanged onto the outer peripheral surface of the arm of the fork.

4,353,450

TWO STAGE DISENGAGEMENT SPRING FOR ELECTROMAGNETIC TOOTH CLUTCHES

Jack C. Wakefield, 2779 Miller St., Big Flats, N.Y. 14814

Filed Dec. 17, 1979, Ser. No. 104,350
Int. Cl.³ F16D *27/10*
U.S. Cl. 192—84 C **9 Claims**



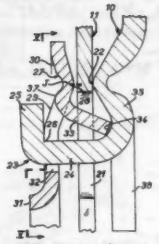
1. An electromagnetic clutch comprising:
a driven clutch member;
a driving clutch member mounted adjacent to said driven clutch member for communication with said driven clutch member;
electromagnetic actuating means mounted to said driven and driving clutch members for providing a driving engagement between said driven and driving clutch members when the electromagnet actuating means is energized, said electromagnet actuating means further comprising:
an electromagnetic armature member; a hub member mounted adjacent to said electromagnetic armature for communication therewith and a spline connecting said electromagnetic armature to said hub member for providing relative movement between said hub member and said electromagnetic armature, said electromagnetic armature further comprising:
a face portion;
a first indentation in said face portion; and
a second indentation in said face portion adjacent said first indentation;
a pair of magnetic poles mounted adjacent said electromagnetic armature member for drivably engaging said armature member;
mutually engagable driving teeth mounted to said armature member and one of said pair of magnetic poles for engagement of said armature member to said one of said pair of magnetic poles when said electromagnet actuating means is energized; and
biasing means, mounted between said driven and driving clutch members for disconnecting said driving engagement of said electromagnet actuating means when said electromagnet actuating means is deenergized, said biasing means further cooperating with said first indentation to provide an initial breakaway force to separate said armature member from said pair of magnetic poles and cooperating with said second indentation to provide a smaller force than said initial breakaway force to further separate said armature member from said pair of magnetic poles.

4,353,451

DIAPHRAGM CLUTCH MECHANISM

Michel Bacher, Garges-les-Gonesse, France, assignor to Valeo, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,461
Claims priority, application France, Jun. 25, 1979, 79 16225
Int. Cl.³ F16D *13/44*
U.S. Cl. 192—89 B **10 Claims**



1. In a diaphragm clutch mechanism for a motor vehicle, of the kind comprising a generally annular cover member adapted to be peripherally attached to a reaction member, and intended to be rotationally fast with a pressure plate; a diaphragm comprising a peripheral portion forming a Belleville spring for acting on the pressure plate and a central portion divided into radial fingers for cooperation with a clutch release bearing; and connection means pivotally fastening the diaphragm to the cover for rocking movement with respect thereto, said connection means comprising fastening members extending from the cover each having an axial portion and a radial portion, which portions define between them a wedging bend, and a diaphragm support ring located by said bend, the cover and the support ring defining for the diaphragm a primary fulcrum support and a secondary fulcrum support respectively, these fulcrum supports being disposed substantially opposite one another; the improvement in which the primary and secondary supports are spaced apart a distance greater than the thickness of the diaphragm, whereby a clearance is provided between the supports and the diaphragm, and the support ring is wedged in position on the cover between said bend and a wedging zone spaced from said bend and from said primary and secondary supports, a prestressing force greater than the clutch release force being developed on the support ring between the wedging bend and the aforesaid wedging zone.

4,353,452

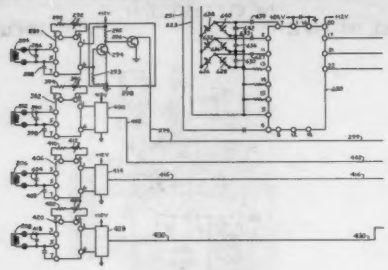
COIN-HANDLING DEVICE

Hasmukh R. Shah, and Michael S. Ross, both of Hot Springs, Ark., assignors to U.M.C. Industries, Inc., Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,434
Int. Cl.³ G07F *3/02*
U.S. Cl. 194—100 A **17 Claims**

12. An electronic slug rejector which has an authenticity-determining coil that is intended to effect the rejection of substantially all slugs and that is intended to effect the acceptance of substantially all authentic coins, a detecting coil which is positioned beyond said authenticity-determining coil, whereby coins and slugs move past said authenticity-determining coil and then move past said detecting coil, an oscillator which causes said detecting coil to develop a magnetic field having a frequency high enough so said magnetic field is damped to a lesser extent by a copper slug than it can be damped by a non-cupreous coin, an accept-reject gate which is disposed beyond said detecting coil and which is disposable in accept position to effect the acceptance of authentic coins and which is disposable in reject position to effect the rejection of slugs, means to effect movement of said accept/reject gate between accept and reject positions, and a circuit which can

cause said means to dispose said accept/reject gate in accept position only if said authenticity-determining coil provides a signal indicating that an authentic coin has moved past it and if said detecting coil provides a signal indicating that a non-cupreous coin has moved past it, said circuit causing said



means to leave said accept/reject gate in reject position in the event said circuit does not receive a signal from both said authenticity-determining coil and said detecting coil, and said detecting coil not providing a signal when a copper slug moves past it and thereby effecting the rejection of said copper slug by said accept/reject gate.

4,353,453

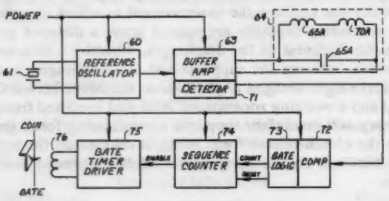
VALID COIN ACCEPTOR FOR COIN ACTUATED APPARATUS

Norman D. Partin, Henderson, Nev., and Charles L. Watson, Phoenix, Ariz., assignors to ATN Research & Development Corporation, Henderson, Nev.

Filed Apr. 10, 1980, Ser. No. 138,996

Int. Cl.³ G07F 3/02

U.S. Cl. 194—100 A **19 Claims**



1. A coin acceptor comprising

a frame assembly defining a package of size and shape interchangeable with electromechanical coin acceptors for coin actuated machines;

said frame assembly further defining a coin passage entrance and exit through said package;

a pair of spaced generally planar members for defining a continuous coin passage therebetween;

said generally planar members each mounting a series of conductive turns for establishing an electromagnetic field in the region of said coin passage;

said series of conductive turns including at least one generally straight length of turns having a straight length at least equal to the major transverse dimension of a coin to be accepted and separated from the remaining portion of said series of turns by a region free from turns;

means coupling electric current to said series of turns;

means for detecting changes in the current in said field as a function of the passage of coins through said passage;

logic means for detecting at least one maximum and one minimum level of current during the passage of a coin through said passage;

means for comparing the maximum and minimum current levels with a predetermined maximum and minimum value; and

means for applying enabling input to said machine responsive to the output of said comparator means.

4,353,454

APPARATUS FOR TRANSPORT AND TEMPORARY STORAGE OF CIGARETTES OR THE LIKE BETWEEN PRODUCING AND PROCESSING MACHINES

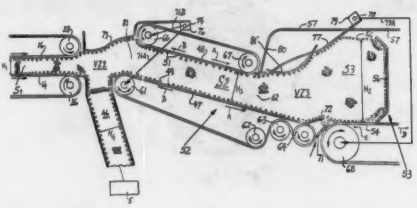
Gerhard Tolasch, and Hans J. Grasse, both of Wentorf, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 878,615, Feb. 16, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,736

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758863

Int. Cl.³ B65G 1/00

U.S. Cl. 198—347 **6 Claims**



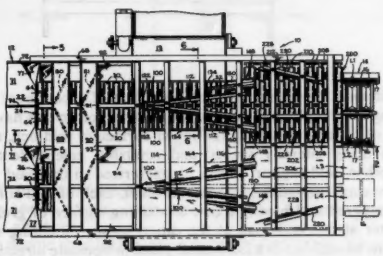
1. Apparatus for transporting cigarettes or analogous rod-shaped articles which constitute or form part of smokers' products from at least one varible-capacity producing machine to at least one variable-capacity consuming machine, comprising means for transporting a multi-layer stream of articles from the producing machine along a first path having a discharge end and a first height; a conveying device including a channel having a receiving end at said discharge end and defining a second path for delivery of articles of said multi-layer stream to the consuming machine, the cross-sectional area of said channel being such that the articles therein form a multi-layer stream; at least one variable-volume surge bin having a second height exceeding said first height and further having a first inlet-outlet opening for admission of articles into and for evacuation of articles from its interior, said surge bin comprising an end wall movable toward and away from said first opening to thereby respectively reduce and increase the volume of said surge bin; means for monitoring the upper level of the article layer in the region of said first opening; means for moving said end wall away from and toward said first opening when the monitored level respectively rises and falls; sensor means adjacent to said discharge end and movable between a plurality of positions each indicative of a different ratio of the rate of transport of articles along said first path to the rate of delivery of articles along said second path; a reservoir communicating with said first opening and having a second inlet-outlet opening adjacent to said first path, said reservoir having in the region of said first opening a third height which is less than said second height but exceeds said first height and said reservoir including means for conveying articles from said surge bin to said first path for introduction into said receiving end when the requirements of the consuming machine exceed the output of the producing machine and for conveying articles from said first path into said surge bin when the output of the producing machine exceeds the requirements of the consuming machine, said second opening being in communication with said discharge end and with said receiving end to admit articles from said discharge end into said reservoir when the output of the producing machine exceeds the requirements of the consuming machine and to admit articles from said reservoir into said receiving end when the requirements of the consuming machine exceed the output of the producing machine; means for

facilitating the merger of articles delivered by said conveying means into the stack of articles in said surge bin, including a hump disposed in the region of said first opening so that articles entering or leaving said surge bin advance over said hump, said hump causing the articles to shift vertically and to thereby facilitate the transition between different layer heights; and drive means for operating said conveying means in dependency on the position of said sensor means so as to advance articles from said surge bin to said first path when said ratio decreases and to advance articles from said first path into said surge bin when said ratio increases.

4,353,455
ARTICLE HANDLING APPARATUS

Harold J. Mumma, and Michael E. Reed, both of Riverside, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 18, 1977, Ser. No. 825,617
Int. Cl.³ B65G 47/24
U.S. Cl. 198—384 6 Claims

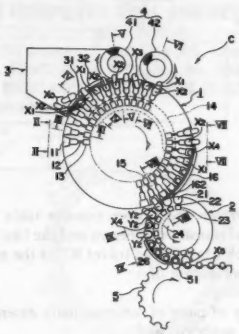


1. An apparatus for receiving randomly oriented, elongate, ellipsoidal articles of varying lengths, such as potatoes, and discharging the articles in a single file in timed relationship, said apparatus comprising: a roller conveyor including an endless series of uniformly spaced parallel rollers having elongate spaces therebetween, means for supporting said rollers to form a horizontal upper reach, means for driving said series of rollers to move along a path of travel, means for causing said rollers to rotate as they are moved through a portion of said upper reach along said path of travel, said rollers having substantially unobstructed lateral edges along one side thereof through said upper reach portion, and means for laterally transferring articles carried upon said upper reach as they move through said upper reach portion including a frame, at least two discs rotatably mounted to said frame above said horizontal upper reach portion in closely spaced, generally vertical relationship, each of said discs having recesses formed in the periphery thereof for complemental engagement against said rollers in said upper reach and with projections formed between said recesses for extension into the spaces between said rollers, said discs being mounted to extend diagonally across said conveyor in overlapping relationship with the downstream end of the upstream one of said discs covering the upstream end of the downstream one of said discs in the path of travel of the articles, said discs being spaced in the direction of movement of the conveyor such that as a space between the rollers comes into registry under the axis of said upstream one of said discs, said space will be penetrated by a projection of said upstream disc, and as said space thereafter moves downstream, it will be penetrated concurrently by said projection of said upstream disc and by a projection of the adjacent downstream disc, and as said space moves further downstream, it will be penetrated only by said projection of said downstream disc, whereby said articles are pushed and transferred laterally in said elongate spaces by said discs without being caught between said discs and said rollers, said downstream disc being spaced a selected distance from said one side edge of said rollers such that only a single file of articles will be permitted to pass by said discs and remain on said conveyor, whereby said one open edge of the rollers permits excess articles to be pushed thereover to leave said single file thereof.

4,353,456
CAPSULE ORIENTATION CONTROL METHOD AND APPARATUS

Taizo Yamamoto, Osaka, Japan, assignor to Nippon Elanco Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1980, Ser. No. 143,020
Claims priority, application Japan, Apr. 27, 1979, 54-53033; Jun. 28, 1979, 54-82843
Int. Cl.³ B65G 47/24
U.S. Cl. 198—397 25 Claims



1. A method of controlling orientation of a plurality of capsules accommodated in any arbitrary posture in a supply hopper having its bottom portion opened, and each composed of a substantially cylindrical body and a substantially cylindrical cap which is mounted on the body so as to overlap one end portion of said body to define a capsule chamber, by causing said capsules to be individually and successfully received in a plurality of radially inwardly extending stepped capsule accommodating pockets which are formed in a rotary drum supported substantially below said bottom portion of said supply hopper for rotation in one direction and which are spaced from each other at equal intervals around the periphery of said rotary drum so as to transport the capsules accommodated in said capsule accommodating pockets through rotation of the rotary drum in a circumferential direction of said rotary drum for directing the capsules in a predetermined posture during the transportation thereof, said method comprising the steps of:

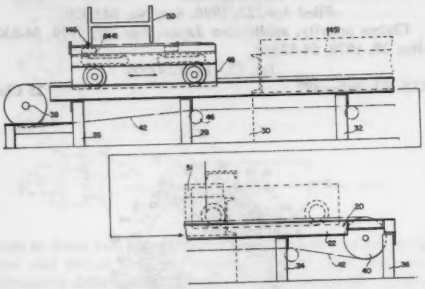
receiving and holding the capsules from said supply hopper in such a manner that the axes of the capsules are aligned with the radial direction of said rotary drum such that it can be spatially identified that the capsules are stably held in said capsule accommodating pockets with the caps thereof selectively radially outwardly orientated in an erect posture or radially inwardly orientated in an inverted posture through action of rotary brush means rotatably provided in a position adjacent to a portion of said rotary drum where the capsules are received onto said rotary drum from said supply hopper, wherein part of the bodies of said capsules in the inverted posture extend substantially outwardly from the periphery of said rotary drum due to the stepped nature of said pockets for discrimination of the capsules in the inverted posture from the capsules in the erect posture which are housed entirely within the respective capsule accommodating pockets and

causing the capsules in said inverted posture to collide with a first attitude altering stopper plate means so as to fall down within said capsule accommodating pockets in a predetermined direction.

4,353,457
AIRLIFT

Ernest K. Haley, Louisville, Ky., assignor to Lerco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 32,833, Apr. 24, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,641
Int. Cl.³ B65G *25/00, 37/00, 19/02*
U.S. Cl. 198—774 7 Claims



1. A roller carriage and I-beam transfer table operable for storage and lateral transfer of I-beams and the like onto an axial conveyance which has a line of travel 90° to the transfer table, including the combination of:

A. A table having:

(i) a plurality of pairs of longitudinally extending I-beam stationary supports, and

(ii) a pair of roller carriage tracks supported between each pair of I-beam supports; and

B. A roller carriage reciprocably supported upon said roller carriage tracks intermediate ech pair of I-beam supports and further including:

(i) a wheeled base including two pairs of wheels engaging said roller carriage tracks and mounted upon transverse axes;

(ii) a vertically expansible mid-section including an inflatable bladder; and

(iii) a roller top supported upon said expansible mid-section and having a plurality of roller trains mounted upon axes parallel to the axes of said pairs of wheels adapted to engage an I-beam flange, each said train extending in a longitudinal direction and each roller train further comprising a first roller mounted upon a first transverse axis and a second roller mounted upon a second transverse axis which is transversely and longitudinally spaced from said first transverse axis wherein each roller train is positioned, so that the first and second transverse axes of each roller train are staggered with respect to the corresponding first and second transverse axis of adjacent roller trains, whereby a plurality of rollers per linear inch are provided in said longitudinal direction upon said supports;

(iv) a conveyor drive means extending longitudinally between each pair of longitudinal I-beam supports, said conveyor drive means being rotatably mounted fore and aft with respect to said roller trains, such that said conveyor drive means extends longitudinally intermediate said roller carriage tracks; and

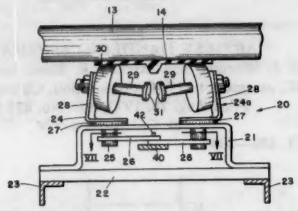
(v) a dog supported upon said conveyor drive means operable to engage the transversely and vertically extending flanges on an I-beam and the like in order to laterally transport said I-beam upon said roller trains at a right angle, with respect to said transverse axes, and longitudinally, with respect to said longitudinal extending supports; and

C. Means expanding said expansible mid-section, so as to raise said roller tops above said longitudinally extending supports, and an I-beam supported thereon, for lateral transfer of the I-beam from said transfer table to an adjacent conveyance line.

4,353,458
BELT SUPPORTS FOR ACCUMULATORS

Charles W. Saur, Sparta, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed May 9, 1980, Ser. No. 148,546
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 17 Claims

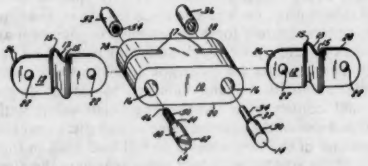


1. Support means for the flat drive belt of a conveyor for moving articles along the conveyor, said support means having a pair of rollers contacting the lower surface of said belt, said rollers being laterally spaced and rotatably independent of each other, said support means characterized in that said rollers are each mounted on a separate shaft, each of said rollers being tapered and having a belt contacting surface of greater diameter at one end than at the other, means mounting said shafts to be inclined in a horizontal plane in opposite directions to each other and vertically inclined to the plane of the surface of said belt, the angle of vertical inclination being substantially equal to the taper of said rollers, said shafts being longer than said rollers and said rollers being axially movable along said shafts while the belt contacting surfaces of said rollers remain in a common horizontal plane parallel to the plane of the bottom surface of said belt.

4,353,459
CONVEYOR CHAIN

Victor D. Petershack, Elm Grove, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Feb. 28, 1980, Ser. No. 125,593
Int. Cl.³ B65G *17/06, 17/38*
U.S. Cl. 198—852 9 Claims



1. A conveyor chain comprising:

(a) A plurality of block links having a transverse hole near each lengthwise end, connected together in end-to-end relation;

(b) A plurality of flexible links, each flexible link comprising a thin longitudinal mamber having a transverse hole near each lengthwise end, each thin longitudinal member being positioned between and forming the primary connection between successive block links, each flexible link hole being aligned with a block link hole in successive block links; said flexible links having an undulated shape at their central portion so as to promote lateral flexing of the chain in the central portions of said flexible links and away from said block links; and

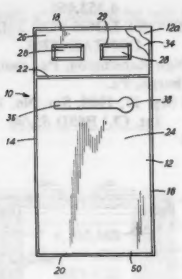
(c) Attachment means engaging said block link holes and said flexible link holes for joining said block links to said flexible links.

4,353,460

POUCH FOR ARMS AND AMMUNITION

Richard D. Kahn, Johannesburg, South Africa, assignor to Kahn & Kahn Plastics (Proprietary) Limited, Edenvale, South Africa

Filed Aug. 18, 1980, Ser. No. 179,221
Int. Cl.³ B65D 77/38, 33/08; F42B 37/00, 39/00
U.S. Cl. 206—3 16 Claims



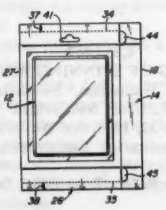
1. A pouch for arms and ammunition comprising
a sealed plastic sheet means forming a water impervious chamber,
a plastic strip member bonded on to said plastic sheet means,
a tag member at one end of the strip member which is unattached to the plastic sheet means,
a pair of spaced parallel lines of weakness in the plastic sheet means immediately below and running along the length of the strip member,
a weakness in the plastic sheet means between the lines of weakness and near the strip adjacent the tag member, and
handle means to facilitate carrying the pouch,
the arrangement being such that when a pull or tug is applied to the tag member, the plastic sheet means thereunder will tear at the said weakness and along the said lines of weakness leaving a slot through which the contents of said pouch can be reached.

4,353,461

MERCHANDISE PACKAGING SYSTEM

Wang-Tao Liang, A2, 3rd Fl. Mount Trio Ct., Waterloo Road Hill, Kowloon, Hong Kong

Filed Oct. 7, 1980, Ser. No. 194,822
Int. Cl.³ B65D 5/54, 65/06, 65/12
U.S. Cl. 206—45.34 9 Claims



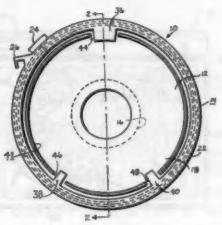
1. A display package for displaying merchandise and for subsequently boxing said merchandise, comprising
a card foldable back on itself to provide a generally planar multilayer display card and the other face of said card is folded directly on itself wherein one face of said card provides the front and back exposed surfaces of said display card,
means secured to said one face on the front of said display card for holding merchandise against said one face, and
said card being provided with a plurality of fold lines and slits to permit said card to be folded along said lines to form a polygonal box wherein said one face of said card constitutes the interior surface of said box and said other face of said card constitutes the exterior surface of said box and said merchandise held against said one face is enclosed by said box.

4,353,462

KEYED COMPUTER REEL AND SEALING RING ASSEMBLY

Aloysius J. Polaneczky, 7 Red Oak Rd., Oreland, Pa. 19075

Filed Nov. 3, 1980, Ser. No. 203,501
Int. Cl.³ B65D 45/32, 85/67; B65H 75/02; B65D 55/02
U.S. Cl. 206—53 5 Claims



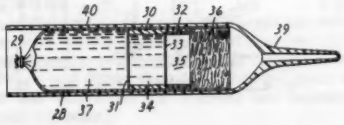
1. A reel and sealing ring assembly for computer tape and the like, wherein said reel comprises a central spool and pair of spaced flanges, and wherein said sealing ring comprises a flexible strap for sealingly encircling the reel, and the improvement to ensure that a corresponding reel and strap are assembled, comprising:
(a) a first formation on one edge of said strap;
(b) a second formation, complimentary to said first formation on one of said flanges; and
(c) a third formation complimentary to the other edge of said strap and uncomplimentary to said first formation.

4,353,463

RESIN-CONTAINING CARTRIDGES AND PROCESS FOR SEALING SOLID STRUCTURES OR FOR ANCHORING BOLTS AND RODS THEREIN

Ronald W. Seemann, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 67,044, Aug. 16, 1979, Pat. No. 4,253,566. This application Jan. 19, 1981, Ser. No. 226,386
The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.
Int. Cl.³ B65D 25/08
U.S. Cl. 206—220 3 Claims



1. A cartridge assembly which comprises:
(a) a cartridge containing at least two segregated components of a multi-component curable resin system, which cartridge comprises

(1) a generally cylindrical, rupturable container containing at least one component of said multi-component curable resin system;

(2) integral therewith, at one end of and in axial alignment with said generally cylindrical, rupturable container, a mixer having an inlet and an outlet and comprising a liquid permeable, three-dimensional matrix having a plurality of continuous flowpaths therethrough, essentially all of these flowpaths being non-linear; and

(3) means for selectively rupturing said rupturable container at the end thereof adjacent the inlet of said mixer assembly; and

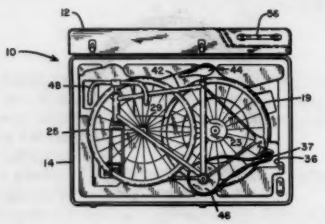
(b) nozzle means at the outlet of said mixer assembly to dispense the curable resin system.

4,353,464

BICYCLE STORAGE AND TRAVEL CASE

James S. Bentler, 105 E. Toledo St., Duluth, Minn. 55811

Filed Apr. 27, 1981, Ser. No. 257,513
Int. Cl.³ B65D *85/68*
U.S. Cl. 206—335 15 Claims



1. A container for the storage and transport of a disassembled bicycle, comprising:

(a) a first container section having an outer cover, an intermediate plastic foam filler and an inner formed surface contour, said surface contour having a lower level circular recess adapted for seating a first bicycle wheel and a higher level circular recess adapted for seating a second bicycle wheel in partial overlapping of said first wheel, and a plurality of further recesses for accepting further bicycle assemblies; and

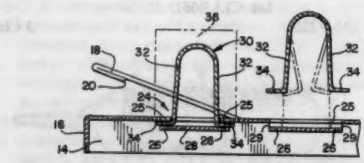
(b) a second container section having an outer cover, an intermediate plastic foam filler and an inner formed surface, whereby said second section may be closed over said first section.

4,353,465

PORTABLE TRAY FOR MECHANICS SOCKETS

Robert J. Rado, 5330 W. Fletcher, Chicago, Ill. 60641

Filed Jun. 11, 1981, Ser. No. 272,510
Int. Cl.³ B65D *85/20, 1/34*
U.S. Cl. 206—378 7 Claims



1. A tool storage device for retaining sockets used in ratchet wrenches, the improvement comprising:

a tray having a top and supporting means to dispose the top in a position spaced above a supporting surface;

opening means located in the top and providing a plurality of seat means with a base located below said top and having means connecting with the top and forming a continuation thereof and also providing spaced slits;

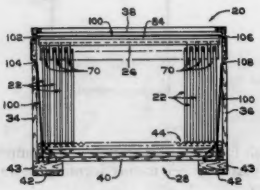
resilient retaining fingers having upstanding sides and having leg means extending outwardly and spaced apart a distance greater than the distance between the spaced slits whereby when the leg means are located in the slits a retaining biasing force is provided to hold the fingers securely in position.

4,353,466

SLOTTED SUPPORT LOGS FOR SHEET SHIPPING CONTAINERS

Walter E. Pater, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 17, 1980, Ser. No. 187,879
Int. Cl.³ B65D *85/48*
U.S. Cl. 206—453 15 Claims



1. A shipping container, comprising:

a base;

a plurality of glass sheets having a bottom edge portion and an opposite upper edge portion;

means mounted on said base for supporting bottom edge portion of said sheets, said supporting means includes a pair of sheet supporting and retaining logs, at least one of said logs comprising an elongated member having a longitudinally extending sheet edge supporting surface having an adhesive surface and at least one row of spaced uprights forming sheet edge receiving recesses therebetween, said recesses generally transverse to the longitudinal axis of said member, wherein said sheets have bottom edge portions mounted in selected ones of the sheet edge receiving recesses to space adjacent sheets; and

means mounting said upper edge of said sheets for biasing said sheets against said adhesive surface to minimize motion of said sheets along a path transverse to the longitudinal axis of said member.

4,353,467

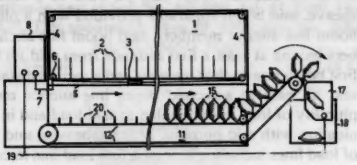
SORTING OF SPINNING BODIES

Isidor Harzenmoser, Wallisellen, Switzerland, assignor to Zellweger Uster A.G., Uster, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,706
Claims priority, application Switzerland, Oct. 29, 1979, 9659/79
Int. Cl.³ B65G *47/24;* B07C *5/00*
U.S. Cl. 209—559 14 Claims

1. A method of sorting spinning bodies on spinning machines having plural spinning stations comprising the steps of detecting a qualitative feature of each of the spinning bodies at said spinning stations in the spinning machine during spinning; simultaneously removing all of said spinning bodies at said spinning stations; transporting said bodies to an ejection point

in the machine; sorting said bodies downstream of said ejection point in accordance with the detected qualitative feature into



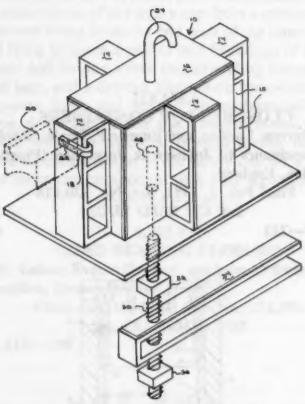
at least two categories; and dispensing said sorted bodies into respective containers.

4,353,468

PORTABLE HAND STAMP STORAGE AND DISPLAY DEVICE

Lon C. Klingamon, 1725 Fox Plaza, San Francisco, Calif. 94102

Filed Feb. 6, 1980, Ser. No. 119,039
Int. Cl.[3] A47F *5/02*
U.S. Cl. 211—39 8 Claims



2. A portable storage and display device for at least one hand stamp comprising:

(a) a support member provided with a bore extending into a lower surface thereof;

(b) at least one elongated lattice member provided with a plurality of spaced apart apertures, said lattice member being attached to said support member such that said apertures are substantially unobstructed;

(c) clip means removably engagable with said lattice member, whereby at least a portion of said clip means extends within one of said apertures;

(d) means for attaching a hand stamp to said clip means; and

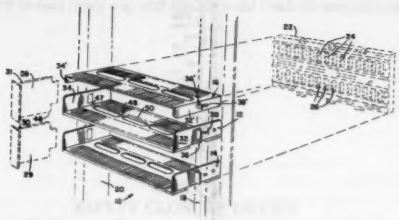
(e) base means including a U-shaped jaw piece, an elongated rod coupled to said jaw piece and having an upper end removably engaging said bore provided in said support member, and means urging the jaws of said jaw piece together to clamp to a support surface.

4,353,469

SUPPORT SHELF FOR PRINTED CIRCUIT BOARDS

John O. Etchison, Jr., Clemmons, and Robert H. W. Jones, Jr., Greensboro, both of N.C., assignors to Western Electric Co., Inc. and Bell Telephone Laboratories, Inc., both of New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,330
Int. Cl.[3] H05K *7/18*
U.S. Cl. 211—41 7 Claims



1. A support shelf which comprises:

a first planar sheet-like support section having a plurality of elongated parallel guide channels defined by opposed parallel ribs projecting out of the plane of said support section;

at least one planar sheet-like guide section extending parallel to said first planar support section and having a plurality of elongated parallel guide channels defined by opposed parallel ribs projecting out of the plane of said guide section, the opposed parallel ribs of said first support section projecting in a first direction away from said guide section and the opposed parallel ribs of said guide section projecting in second direction away from said first support section;

a wall interconnecting said first planar support section and said planar guide section;

a second planar sheet-like support section arranged in the plane of and spaced from said first support section to define an opening therebetween, said second planar support section having a plurality of elongated parallel guide channels defined by opposed ribs projecting out of the plane of said second support section in the same direction as the ribs of said first support section, and the elongated guide channels of said second support section being longitudinally aligned with respective ones of the elongated guide channels of said first support section; and

rigid means extending between said first and second support sections for interconnecting said first and second support sections.

4,353,470

VERTICALLY STACKABLE TRAY SET

Marlan H. Polhemus, Chicago, and Peter L. Ferrante, Evanston, both of Ill., assignors to Tenex Corporation, Elk Grove Village, Ill.

Filed Feb. 28, 1980, Ser. No. 125,345
Int. Cl.[3] A47F *3/14*
U.S. Cl. 211—126 6 Claims

1. In a vertically stackable tray set of the type adapted to sit upon a horizontal surface and including at least one tray having upstanding wall means, at least one tray connector, at least one bayonet on said connector, and at least one space in the interior of said wall means for receiving said bayonet; the improvement comprising:

a first upright surface within said interior space and a first side of said bayonet having thereon respective means adapted to interfit;

and a second upright surface within said interior space, confronting said first upright surface, and a second side of said bayonet, facing oppositely to said first side thereof,

having respective means thereon adapted to interengage for crowding said interfitting means into engagement with each other;

said interengaging means comprising respectively a projection extending horizontally into said interior space from said second upright surface thereof and a projection extending horizontally toward said second upright surface from said second side of said bayonet and adapted to

impinge upon said projection of said second upright surface;

said projection on said second upright surface being in the form of a step having a horizontally facing tread surface and a vertically facing riser surface, and said projection on said second side of said bayonet being adapted to ride past said tread surface of said step and at least partly across said riser surface thereof.

4,353,471

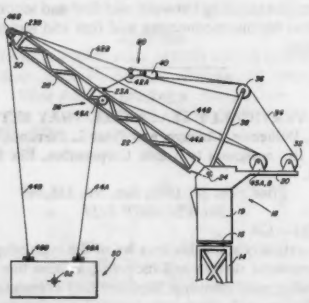
APPARATUS FOR AND METHOD FOR LIFTING LARGE OBJECTS

Dalvin S. Palmer, 5466 W. Cambridge, Phoenix, Ariz. 85035

Filed Mar. 31, 1980, Ser. No. 136,168

Int. Cl.³ B66C *23/06*

U.S. Cl. 212—259 **6 Claims**



1. A crane apparatus especially useful for lifting bulky loads, comprising:

boom means for attaching to said load at spaced-apart portions thereof;

boom support means coupled to said boom means for providing a plurality of boom supports;

said boom means comprising a jib base; a boom apparatus pivotally attached to said jib base, said boom apparatus having a plurality of load sheaves provided with at least a first distance from said jib base to a first load sheave and a second distance from said jib base to a second load sheave, said boom apparatus provided with a plurality of boom line anchor members, said boom line anchor members having at least a first distance from said jib base to a first boom line anchor member and a second distance from said jib base to a second boom line anchor member; a plurality of load lines coupled to said load and in communication with said plurality of load sheaves; said plurality of load lines including at least a first load line in communication with said first sheave and a second load line in communication with said second sheave; and at least one load hoist coupled to each of said load lines and supported by said sheave base;

said first distance to said first load sheave comprising approximately the same as said first distance to said first anchor member and said second distance to said second load sheave comprising approximately the same distance as said second distance to said second anchor member; and

said boom support means comprising a boom hoist coupled to said jib base, a boom hoist line column supported by said jib base, a boom hoist line in communication with said boom hoist line sheave and anchored to said boom hoist, and said boom support means further comprising boom load distributor means for connecting said plurality of anchor members to said boom hoist line.

4,353,472

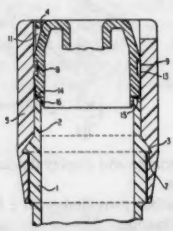
CLOSURES FOR CONTAINERS

George W. Burton, London, and Eugene F. Davis, Ilford, both of England, assignors to Johnsen & Jorgensen (Plastics) Limited, London, England

Filed Feb. 2, 1981, Ser. No. 230,416

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—211 **6 Claims**



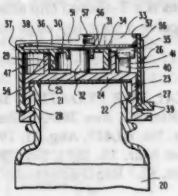
1. A closure cap for closing the mouth of a container comprising an inner member including a plug and an outer member including a depending skirt, characterized in that when the cap is in operative position on the container the inner member is coaxially disposed within the upper part of the outer member, the plug being seated so as to close the mouth of the container with the top of the inner member flush with or below the top of the outer member, the upper part of the outer member being positioned above the mouth of the container, and the skirt of the outer member being positioned so as to embrace and engage with the outer surface of the container around the mouth.

4,353,473

PUSH BUTTON SAFETY CAP FOR CONTAINERS

Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415

Continuation-in-part of Ser. No. 169,840, Jul. 17, 1980, Pat. No. 4,285,437. This application May 29, 1981, Ser. No. 268,278
Int. Cl.³ B65D 55/02
U.S. Cl. 215—220 14 Claims



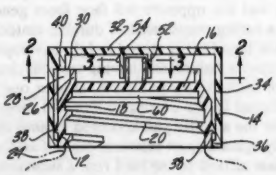
11. A safety cap for threaded containers of harmful substances comprising rotationally connected inner and outer cap components, the inner cap component being threaded for engagement with the threads of a container, a push button element on the end wall of the outer cap component having an attached depending drive lug, a plurality of circumferentially spaced fixed lugs on the opposing end wall of the inner cap component and lying on a substantially common radius and having inclined ramp surfaces engageable with said drive lug of the push button element to raise the push button element during relative rotation of the two cap components, one of said fixed lugs of the inner cap component having a positive drive surface substantially normal to the end wall of the inner cap component and being engageable by the drive lug of the push button element when the latter is in a depressed driving position to cause release of the safety cap from a container, a spring ramp element rising from the end wall of the inner cap component and lying between a pair of said fixed lugs of the inner cap component and having a free end extending above the tops of said fixed lugs, and a driving element on the outer cap component separate from and spaced circumferentially from the depending drive lug of the push button element and being engageable with the free end of said spring ramp element during the screwing down of the safety cap on a container to drive the inner cap component to a fully tightened position.

4,353,474

LOAD BEARING CLOSURE

Charles E. Luker, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jun. 10, 1981, Ser. No. 272,294
Int. Cl.³ B65D 55/02
U.S. Cl. 215—220 11 Claims



1. A screw-type closure comprising: a relatively flexible outer cap and a relatively rigid inner cap nested together and forming an annular zone between said caps, a plurality of ribs disposed on one of said caps in uniformly spaced relationship in said annular zone, a plurality of lug elements formed on the other of said caps and corresponding in number to the number of said ribs, each of said lug elements having a first drive surface engageable with a rib to turn said caps as a unit to a closing position on a container and a second drive surface normally spaced axially of said ribs to prevent engagement therewith upon rotation of said outer cap in an opening direction relative to said inner cap, said second drive surfaces being engageable with said ribs upon axial deflection of said outer cap and simultaneous rotation relative to said inner cap to turn said caps as a unit in an opening direction for removing said closure from a container, said ribs and lug elements having complementary load bearing surfaces engageable with each other upon rotation of said inner and outer caps to a predetermined position to prevent axial displacement of said outer cap relative to said inner cap and absorb axial loads on said closure.

4,353,475

SAFETY CLOSURE DEVICE

Nicholas W. Kachur, Clark, and Anthony F. Tomburo, Cranford, both of N.J., assignors to Gibson Associates Inc., Cranford, N.J.

Filed Jun. 11, 1981, Ser. No. 273,100
Int. Cl.³ B65D 55/02
U.S. Cl. 215—223 6 Claims

1. In combination, safety-closure structure comprising a bottle or the like container having a cylindrical neck member with an external thread of at least substantially one turn, a cup-shaped closure-cap member with a cylindrical bore wall having an internal thread of at least substantially one turn and removably engageable with said external thread, the effective width of each of said threads in the axial direction being less than half the helically advancing pitch of said threads, resilient circumferentially extending continuous seal means within said cap member and coacting with said neck member throughout at least a substantial fraction of the threaded engageability of said cap and neck members, said fraction being to and including an angular cap-to-neck relation wherein cap-member closure of said neck member is complete, whereby said seal means continuously loads the cap threads into axially upward engagement with the axial underside of the neck threads at least in on-threading approach to said angular relation of completed cap-member closure of said neck member, a radially inward locking lug integral with the bore wall of said cap member and axially offset from said internal thread, and a radially outward locking lug integral with said neck member and axially offset below said external thread, said lugs having cammed transiently deforming interaction upon approach to said completed-closure relation and escaping into a locking interaction upon achievement of said completed closure position, said neck lug and cap lug being of such limited axial extent that, when in the completed-closure relation, said cap member may be axially downwardly displaced in further compression of said seal means to angularly clear the engagement of said lugs thereby to permit otherwise-free unthreading manipulation of said cap member.

4,353,476

PAINT APPLICATOR HOLDER

Charles F. Cowgill, 387 Amity Rd., Galloway, Ohio 43119

Filed Jul. 7, 1980, Ser. No. 166,584
Int. Cl.³ B65D *25/20*
U.S. Cl. 220—85 D 5 Claims

1. A receptacle for a paint applicator, constructed to be adhered to the side of a paint container, comprising:

a. an attachment wall surface formed to meet two sets of edge members, the edge members of each set being formed in a folded bellows construction;

b. an outer wall having a top, sides, and bottom, and being attached to one of said sets of members at each of said sides;

c. an adhesive composition disposed upon the attachment wall surface, and the bottom of the outer wall, the composition being formulated for adherence to the outer surface of the paint container, the attachment wall surface, and the bottom of the outer wall; and

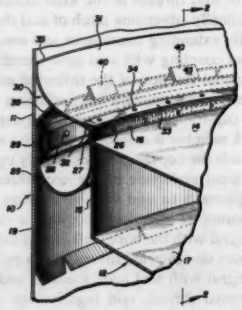
d. the receptacle being formed from a sheet which in its developed form before assembly on the paint container comprises, at least one attachment wall portion beside a portion having at least one crease, beside a portion comprising the outer wall, beside another portion having at least one crease, beside an attachment wall portion, the creases being means to form the bellows in the assembled position on the paint container.

4,353,477

FLOATING ROOF METALLIC SHOE SECONDARY SEAL

Robert A. Bruening, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sep. 30, 1977, Ser. No. 838,051
Int. Cl.³ B65D *88/46*
U.S. Cl. 220—224 2 Claims



1. In a liquid storage tank having a floating roof, a plurality of shoes adapted to slidably contact the inner side wall of the tank, and means supported by the roof for pressing the shoes against the inner side wall, and a fabric vapor barrier extending from the roof to the shoes, the improvement comprising:

an elastomeric strip, impermeable to vapor, in the form of an annulus connected at its bottom edge portion by an essentially vapor tight joint to the top circumference of the roof and with its top edge portion in movable sealing contact with the tank inner wall above the top of the shoes,

said strip being arced upwardly from the roof and supported intermediate its bottom and top edges by support means, mounted on the upper portion of the shoes, in contact with the lower surface of the elastomeric strip,

the support means and lower surface of the elastomeric strip being in slidable contact with each other, and

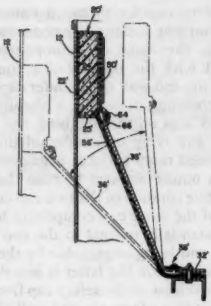
the support means is a T-shaped clip attachment having two legs which receive a shoe top edge therebetween.

4,353,478

VAPOR SEAL FOR FLOATING ROOF TANK

William F. Clark, Rte. #1, Box 208-A, Glasgow, Va. 24555

Continuation of Ser. No. 68,457, Aug. 21, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,227
Int. Cl.³ B65D *88/46, 88/50*
U.S. Cl. 220—224 10 Claims



1. In a storage tank for liquids such as petroleum liquids and the like, comprising a generally upstanding cylindrical tank wall and disposed within said wall a generally circular roof therefor adapted to float horizontally upon the contents of the tank in vertically movable relation according to a variation in the volume of such contents, a clearance space being defined between the inner wall surface of said tank and the outer peripheral rim of said floating roof, in combination, an improved vapor seal for said clearance space comprising a resilient pad extending annularly around the inner wall surface of the tank in vertically spaced relation above the roof rim, said pad being elongated in vertical cross section with a height substantially greater than its thickness and having two oppositely facing tall faces extending between upper and lower ends, said pad being arranged with its height direction extending generally vertically so that one of said tall faces faces generally radially outwardly and the opposite tall face faces generally radially inwardly; a casing constituted of durable material resistant to attack by the liquid being stored tightly enveloping said pad in generally tubular fashion and having sections thereof generally coextensive with the tall pad faces, at least one of which sections is adhered to the corresponding pad face; a plurality of supports for the annular pad arranged around said roof rim in peripherally spaced apart relation, each of said supports comprising a base affixed to the roof rim, a substantially rigid arm hingedly connected at its lower end to said base and extending generally upwardly therefrom, a separate extension at the upper end of said arm, a hinged connection between the upper end of said rigid arm and the lower end of said extension, and means for biasing said extension generally radially outwardly of said arm about said hinged connection; means anchoring said extension to the casing section corresponding to the inwardly facing tall pad face over more than half the tall dimension thereof; means for biasing said arm outwardly from said base to urge the outer face of the pad toward said tank inner

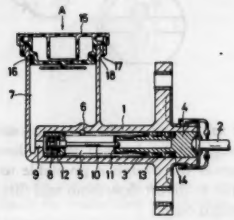
wall; and a skirt of flexible impervious material extending from the casing to the tank rim to close the space therebetween.

4,353,479

MASTER CYLINDER RESERVOIR AND COVER FASTENING MEANS

Kaoru Nakamura, Anjo, and Akira Funabashi, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 3, 1981, Ser. No. 270,000
Claims priority, application Japan, Jun. 12, 1980, 55-81044[U]
Int. Cl.³ B65D *41/06, 41/36*
U.S. Cl. 220—301 5 Claims



1. A master cylinder reservoir including a reservoir cap fixed in an open portion of said reservoir, said reservoir comprising:

a cam means formed on the periphery of said reservoir in the direction meeting at right angles with the axial center of said reservoir, said cam means being of a circular arc configuration so as to gradually increase its radius;

a nail means formed on said reservoir cap and having tip end bended inside, said nail means being displaced outwardly during engaging with said cam means;

a guide means formed on the upper end of said cam means wherein the lower end of said guide means may be formed so as to agree with at least the upper end of said cam means;

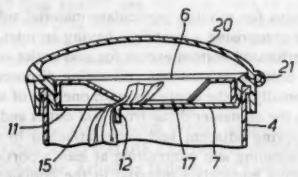
a gloove-hole means formed between the end portion of said cam means defined by the maximum radius portion of said cam means and a stop means formed on said reservoir.

4,353,480

CLOSURE FOR A DISPENSER CONTAINER

Robert C. McFadyen, North Ryde, Australia, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 47,428, Jun. 11, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,832
Int. Cl.³ A47K *10/38*
U.S. Cl. 221—63 3 Claims



1. A dispenser-container for a perforated web of tissues comprising an open top tub-like container for storing a web of tissues and a closure formed by an inner and an outer diaphragm each having an opening therethrough, the openings being adjacent to and completely out of register with each other, at least one of the diaphragms being resilient to urge the diaphragms together and resiliently seal one of the openings, the tissue web being threaded in turn through the opening in the inner diaphragm and the opening in the outer diaphragm.

4,353,481

MAGAZINE FOR STORING AND SUPPLYING CIRCUIT ELEMENTS

Shuichi Tando, Tokyo, Japan, assignor to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 198,232
Claims priority, application Japan, Oct. 23, 1979, 54-145893[U]; Oct. 23, 1979, 54-145894[U]
Int. Cl.³ G07F *11/16;* B65D *85/62, 83/00*
U.S. Cl. 221—251 5 Claims

1. In a magazine for storing and supplying circuit elements having a tube which stores the plurality of circuit elements in a stacked state within a bore thereof, the tube having an open upper discharge end, the bore being adapted to receive a plug member so as to be movably disposed within the bore for supporting the stacked circuit elements, the improvement comprising:

an elastic member provided at one side of a region of the upper discharge end of said tube, said elastic member having a free end, and a keeper pawl formed at the free end of said elastic member extending inwardly into the bore for holding under pressure a leading one of the circuit elements within said bore, said keeper pawl having a free end which is located lower than the discharge end of said tube;

said bore being defined by inner surfaces of said tube, at least one of said inner surfaces having at least one inwardly protruding rib which extends continuously in a longitudinal direction; and

a plug member including a platform portion adapted to support the circuit elements from below in a stacked state and engaging portions integral with said platform portion, said engaging portions elastically engaging the inner surfaces of said tube so that said plug member is prevented from falling within said tube under its own weight;

whereby the circuit elements can be discharged from the upper discharge end in an axial direction.

4,353,482

ADDITIVE METERING CONTROL SYSTEM

Harvard L. Tomlinson, and Stephen F. Crain, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 23, 1980, Ser. No. 114,615
Int. Cl.³ B67B *7/00;* G05D *11/02*
U.S. Cl. 222—1 37 Claims

1. An additive metering control system comprising:

means for determining the amount of an additive being discharged from an additive container;

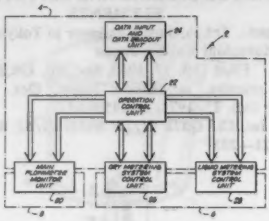
means for sensing the amount of a primary substance being discharged from a primary substance container;

means, responsive to said additive determining means and said primary substance sensing means, for controlling the

amount of the additive being discharged from the additive substance container; and

said primary substance sensing means including:

means for generating a first electrical signal proportional to the flow rate of the sensed primary substance;



means for simulating a flow rate of the primary substance and for generating a second electrical signal proportional to the simulated flow rate; and

means for switchably communicating said first electrical signal generating means and said simulating and generating means with said controlling means.

4,353,483

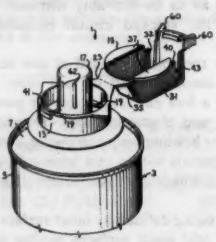
CONTAINER CAP HAVING SAFETY LOCKING MEANS

Harold T. Pehr, 253 Merihil Office Center, 6900 W. 80th St., Overland Park, Kans. 66204

Filed Nov. 24, 1980, Ser. No. 209,671

Int. Cl.³ B65D *47/08*

U.S. Cl. 222—153 **14 Claims**



1. A closure cap for use with a material dispensing container having a material dispensing nozzle; said cap comprising:

(a) a ring portion adapted to securely engage an aerosol can;

(b) a closure member hingedly connected to said ring portion;

(c) securing means to selectively secure said closure member in covering relationship with said nozzle such that said closure member is manipulative between a covering and a noncovering position thereof with respect to said nozzle; and

(d) a tamper guard member removably connected to said ring portion in covering relation with respect to said nozzle and adapted to prohibit manipulation of said nozzle prior to removal of said guard member from said ring by a user of said can.

4,353,484

COFFEE FILTER WITH FLOW DIVERTER

Russell C. Crawford, III, 6991 Juana Dr., Millington, Tenn. 38053

Filed Mar. 11, 1980, Ser. No. 129,670

Int. Cl.³ B67C *11/00*

U.S. Cl. 222—189 **1 Claim**

1. I claim a coffee filter and flow diverter having a coffee filter for attachment to a drip coffee maker; an outlet in the bottom of the filter; a pivot on the bottom surface of the filter offset from said outlet; a pivoted valve attached to said pivot on said filter; said pivoted valve comprising an elongated upwardly open trough; said trough sloping downwardly from

a point near said pivot to the side opposite said pivot and having a trough outlet located at the lowest point of the trough; wherever the trough is pivotable to a position under said filter outlet to divert flow from said filter outlet to a point below the trough outlet.

4,353,485

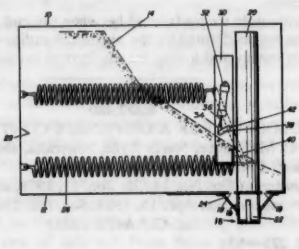
APPARATUS FOR CONVEYING PARTICULATE MATERIAL BY SPRING EXPANSION AND CONTRACTION

Robert J. Chilko, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 12,323, Feb. 15, 1979, abandoned. This application Jun. 4, 1979, Ser. No. 45,190

Int. Cl.³ G01F *11/18*

U.S. Cl. 222—243 **6 Claims**



1. Apparatus for moving particulate material substantially horizontally comprising a container having an inlet, an outlet and an unperforated bottom except for said outlet adjacent an end of said bottom, at least one coil spring disposed substantially horizontally in the container with one end of said spring anchored to the container distal from said outlet and the other end of the spring adjacent said outlet attached to means for cyclically extending and contracting at least a portion of said spring to move particulate material in the container toward said outlet for gravity discharge therefrom, said spring in its contracted state having gaps between adjacent coils and at least a major portion of said spring overlying said unperforated bottom.

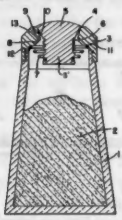
4,353,486

Patent Not Issued For This Number

4,353,487
DOSIFYING CONTAINERS FOR GRANULATED PRODUCTS, PULVERULENT PRODUCTS, ETC.

Jose Ferrante, Gran Canaria 329, 1868 Quilmes Pcia. de Buenos Aires, Argentina

Filed Jan. 11, 1977, Ser. No. 758,502
Claims priority, application Argentina, Jan. 16, 1976, 261949
Int. Cl.³ A47G *19/24*; B65D *47/00*
U.S. Cl. 222—500 **8 Claims**



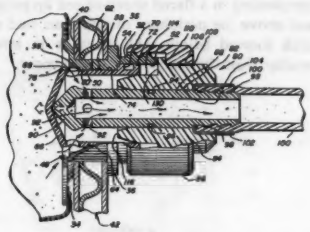
1. A container for dispensing granular or powdery products including a receptacle for containing the product, a cap having a bottom portion assembled on said receptacle and having a top portion provided with an aperture for the egress of the product, said cap aperture including a circular periphery having a reduced diameter portion disposed axially inwardly from the outer endmost portion of said cap aperture periphery, a plug disposed within said aperture and having an uppermost enlarged portion sealingly engageable with said periphery of said cap aperture at a point outwardly beyond the innermost portion of said reduced diameter portion, said plug including a lower body extending downwardly from said uppermost enlarged portion into the interior of said container, said plug lower body having an axially extending cylindrical periphery provided with a diameter less than the diameter of the adjacent said plug uppermost enlarged portion and of said cap aperture reduced diameter portion, a spring having one end secured to said plug lower body, said spring radially extending from said plug lower body and having its other end secured relative the inner wall of said container, said plug lower body cylindrical periphery provided with a plurality of shallow grooves thereon, said grooves angularly offset relative the vertical longitudinal axis of said plug to provide grooves running other than parallel to said plug longitudinal axis, said spring normally biasing said plug uppermost enlarged portion downwardly into sealing engagement with said aperture, said grooves on said plug lower body displaceable upon axial reciprocation of said container to axially displace said plug against the force of said spring and project at least a portion of said grooves through said cap aperture whereby, upon inversion of said container the product gravitates to the juncture of said plug and cap and sudden axial reciprocation of said container alternately displaces said plug against and with the force of said spring to reciprocate said plug lower body axially of said cap aperture as said grooves thereon engage, capture and propel the product from the interior of said container through said cap aperture.

4,353,488
FLEXIBLE CONTAINER WITH DISPLACEABLE FITTING AND PROBE COUPLER APPARATUS

John W. Schneiter, Arlington Heights, and Lawrence R. Hogan, Lake Villa, both of Ill., assignors to Container Technologies, Inc., Barrington, Ill.

Continuation of Ser. No. 142,154, Apr. 21, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 285,937
Int. Cl.³ B65D *47/28*
U.S. Cl. 222—501 **11 Claims**

1. In combination a fitment for a flexible food container, a displaceable seal plug, and a probe connector therefor, said fitment comprising a base flange portion capable of being joined to a wall of the flexible container and a hollow cylindrical spout portion extending therefrom, said spout portion having a passageway communicating with the container's interior, said spout portion further including detent means and lock means formed on the interior thereof; said displaceable seal plug comprising a tubular body portion characterized as having first drain means, said tubular body portion having blade means formed on the outer periphery thereof and terminating in an end cap portion, said seal plug capable of being slidably received within said passageway of said spout portion and characterized as being detachably retained within said passageway when said blade means engages said detent means and further characterized as being lockably retained within

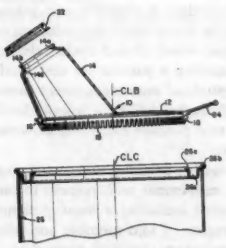


said passageway when said blade means engages said lock means; said probe connector comprising probe adapter means, push probe means slidably supported within said probe adapter means, and means for detachably securing said probe adapter means and supported push probe means to said fitment, said push probe means having second drain means, said push probe means characterized when secured to said fitment as operable upon the sliding displacement thereof to engage said end cap portion of said seal plug and to slidably displace said seal plug farther into said fitment thereby effecting communication between the interior of the flexible container, said first drain means, and said second drain means.

4,353,489
COMBINED LID AND POURING SPOUT FOR A CONTAINER HAVING A U-SHAPED SEALING CHANNEL

Everett L. Arnold, 459 Juniper St., and James M. Moore, 1144 Northfield Cir., both of Warminster, Pa. 18974

Filed Sep. 22, 1980, Ser. No. 189,632
Int. Cl.³ B65D *25/48*
U.S. Cl. 222—570 **2 Claims**



1. A lid, for a container having a U-shaped sealing channel the walls of which terminate in inner and outer ring beads, comprising:

a disc-shaped base of flexible material having an upwardly cambered surface and an integral annular skirt depending from said base, said skirt having inner and outer surfaces, said outer surface having an integral annular sealing

groove for closely engaging said inner ring bead, said outer surface being axially longer than said inner surface and spaced inwardly from the periphery of said base;

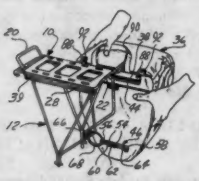
a plurality of integral flexible wedge shaped tangs regularly spaced about the circumference of said skirt and pendent therefrom, each of said tangs having an inner face radially coextensive with the inner surface of said skirt and substantially parallel to the center line of said base and having an outer face extending downwardly and inwardly from a radius intermediate the periphery of the base and the outer surface of said skirt; and

an integral, conically tapering, radially offset spout projecting upwardly at an inclined attitude from said base and terminating in a flared sharp-edged lip projecting beyond and above the periphery of said base, said spout having a neck formed below said lid with an interior diameter smaller than the remainder of said spout.

4,353,490
PANNIER MOUNTING SYSTEM FOR CYCLES

W. Shaun Jackson, 809 Sycamore, Ann Arbor, Mich. 48104, and Leslie E. Bohm, 29560 Rutherland, N., Southfield, Mich. 48076

Continuation-in-part of Ser. No. 84,400, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 768,467, Feb. 14, 1977, Pat. No. 4,174,795. This application Oct. 14, 1980, Ser. No. 196,426
Int. Cl.³ B62J 9/00
U.S. Cl. 224—32 A 16 Claims



1. A pannier mounting system for mounting panniers on a cycle vehicle having a longitudinal axis frame and a rear wheel, comprising:

rack means including a platform and means adapting said platform to be horizontally mounted on said cycle frame over said rear wheel of said cycle vehicle;

means for mounting a pannier on said platform by guided sliding longitudinal interengagement therebetween;

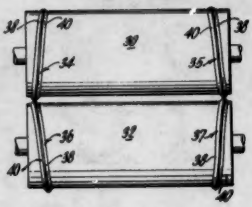
a member relatively stiff in a longitudinal direction and secured to said pannier extending downwardly from the platform; and

means for releasably securing said pannier against longitudinal relative movement with respect to said platform, the securing means including a locator element mounted to the lower region of said member and adapted to engage relatively stationary structure carried by said cycle vehicle thereby precluding disengagement of said pannier and said platform by relative longitudinal movement therebetween after installation thereof, the locator element being generally elongate and including a plurality of recesses therein adapted to engage the stationary structure, said securing means further including means for retaining said locator element in engagement with said stationary structure.

4,353,491
METHOD FOR SHAPING AND PARTITIONING A FIBROUS BATT

Anthony Passafiume, Burbank, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 51,562, Jun. 25, 1979, Pat. No. 4,279,369. This application Nov. 17, 1980, Ser. No. 207,108
The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.
Int. Cl.³ B26F 3/02
U.S. Cl. 225—3 5 Claims

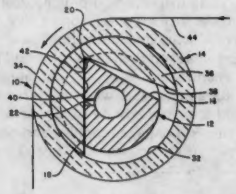


1. A method for shaping a batt of loosely compacted short fibers comprising: conveying a batt of loosely compacted short fibers in a direction, gripping the batt along a first path with a resilient means engaging a first surface of the batt and non-resilient means engaging a second surface of the batt, said path being a substantially sinuous line disposed adjacent a longitudinal edge of the batt, substantially simultaneously gripping the batt along a second path immediately adjacent said first path with a non-resilient means engaging said first surface of the batt and resilient means engaging said second surface of the batt, substantially immediately thereafter displacing said first and second paths with respect to each other from the plane of the batt and on opposite sides of said plane, and releasing the batt to provide a shaped batt.

4,353,492
ENDS-DOWN SENSOR DEVICE

Albert E. Spaller, Jr., Johnson City; Bruce W. Stockbridge, and Thomas D. Meredith, Jr., both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 17, 1981, Ser. No. 284,024
Int. Cl.³ B65H 63/02
U.S. Cl. 226—11 6 Claims



1. An ends-down sensor device adapted to detect the breakage or absence of a cabinet end of filamentary yarn normally in frictional engagement with said sensor device and to activate a suitable signal device upon detecting such breakage or absence, said sensor device comprising:

a fixed center post adapted to be positioned so that its axis lies in a horizontal plane and having two flat surfaces extending along the length thereof and intersecting at a first predetermined angle to form an exterior vertex, said center post defining in the face of one of said flat surfaces an orifice from which air is adapted to flow, and defining therewithin a conduit passageway connected at one end to

said orifice and at the other end to a source of air supply for said air flow and to said suitable signal device, and;

a cylindrical roller having an outer cylindrical surface and interiorly two flat surfaces extending along the length of the axis thereof and intersecting at a second predetermined angle greater than said first predetermined angle to form an interior vertex, said cylindrical roller being positioned upon said fixed center post with the interior vertex of said cylindrical roller being seated for pivotal movement upon the exterior vertex of said fixed center post in such manner that one of the flat surfaces of said cylindrical roller is normally in abutment with one of the flat surfaces of said fixed center post while the other of said cylindrical roller flat surfaces is normally spaced away from the other of said center post flat surfaces having said orifice;

said cylindrical roller, upon frictional engagement of a cabinet end with the outer surface of said cylindrical roller, being rotated about the exterior vertex of said center post until said other of said cylindrical roller flat surfaces is moved into abutment against said other of said center post flat surfaces, thereby closing off said orifice and stopping any significant air flow therefrom.

4,353,493

ADVANCE MECHANISM

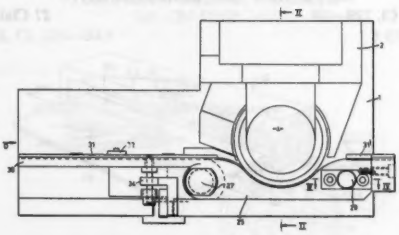
Zoran Perisic, Gwynfenton, White Well, St. Teath, Cornwall, England

Filed Apr. 23, 1980, Ser. No. 142,961

Claims priority, application United Kingdom, Apr. 25, 1979, 7914477

Int. Cl.³ B65H *17/36*

U.S. Cl. 226—158 **11 Claims**



5. A film advance mechanism comprising:

a film track along which film is arranged to be advanced;

a film advance member;

means supporting said film advance member adjacent the film track for unidirectional rotation about an axis;

means for moving the film advance member into engagement with the film so as to advance the film during a part of each revolution of the film advance member;

and means for moving the film advance member to disengage it from the film during the rest of each revolution, whereby the film is intermittently advanced by a predetermined increment during each revolution.

4,353,494

PROCESS AND APPARATUS FOR THE MANUFACTURE OF ANNULAR WORK PIECES FOR SUBSEQUENT CONVERSION INTO FINISHED PRODUCTS

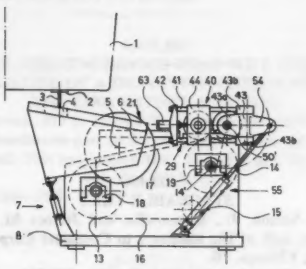
Erik A. Olsson, Rotfluhstrasse 15, CH-8702 Zollikon/ZH, Switzerland

Continuation of Ser. No. 912,479, Jun. 5, 1978, abandoned. This application Aug. 12, 1980, Ser. No. 177,437

Claims priority, application Switzerland, Jun. 7, 1977, 6997/77

Int. Cl.³ B23K *28/02*

U.S. Cl. 228—143 **20 Claims**



15. The process for manufacturing a semi-finished workpiece in the form of an annulus and primarily useful for subsequent manufacture by rolling, foregoing or extrusion operations into seamless products in the form of tubes, rings and hoops comprising:

a. winding a continuous length of strip metal into a coreless annulus between inner and outer parallel rollers forming between them a roll-pass, the inner one of which rollers is smaller in diameter than the center opening of the annulus being formed and with its axis of rotation eccentric to the axis about which said annulus rotates, feeding said metal strip heated to a pressure welding temperature to the roll pass at the same rate that the strip moves through the roll pass to avoid stretching or buckling of the heated strip, and driving the annular body being so wound and simultaneously pressure welded at a uniform peripheral speed notwithstanding its progressive increase in diameter from start to finish.

4,353,495

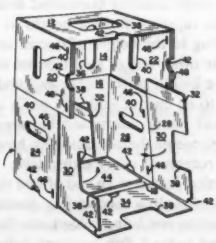
ASPARAGUS CARTON

Otto J. Jes, Long Beach, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed May 18, 1981, Ser. No. 264,762

Int. Cl.³ B65D *5/00, 5/56, 25/00*

U.S. Cl. 229—16 R **8 Claims**



1. A substantially rectangular asparagus carton made from a single sheet of carton stock and comprising:

(a) a bottom, four sidewalls and a top;

(b) an inner sidewall having a trapezoidal configuration and including an edge slanted from the bottom corner of the carton to the top thereof at a point spaced apart from the adjoining sidewall; and

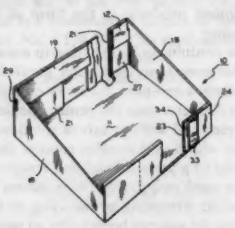
(c) an inner partition hinged to the slanted edge of the trapezoidal sidewall and reaching substantially from the bottom corner to the top of the carton, the partition sloping inwardly to provide an enlarged bottom area designed to accommodate the base portion of the asparagus stalks, and a restricted top area designed to support and protect the fragile top portion thereof.

4,353,496

STACKABLE TRAY

Bennie C. Nelson, Jr., Romeoville, and Jeffrey M. Gardner, Wheaton, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 22, 1981, Ser. No. 227,544
Int. Cl.³ B65D *5/22*
U.S. Cl. 229—34 R **2 Claims**



1. A tray particularly adapted for arrangement in a stack so that the tray can be placed atop another similar tray, each tray being formed from a cut and scored blank of paperboard and comprising:

a rectangular center panel;

opposed end walls foldably connected to opposed ends of said central panel, one end wall being taller than the other end wall, each of said opposed end walls having inner and outer wall elements folded into facing relationship, said inner wall element of said one end wall having locking tabs;

opposed side walls foldably connected to said center panel;

said side walls tapering from a height at one end thereof corresponding to the height of one of said end walls to a height at the other end of said tapered side wall which is less than the height of the other end wall;

a flap joined to an end of said side walls adjacent said one end wall and being interposed between said inner and outer wall elements thereof, said flap having a slot formed therein for receipt of said locking tabs;

a first flap portion joined to an end of said side walls adjacent said other end wall, a second flap portion joined to said first flap portion and being folded into facing relationship, said first and second flap portions being interposed between said inner and outer wall elements thereof; and

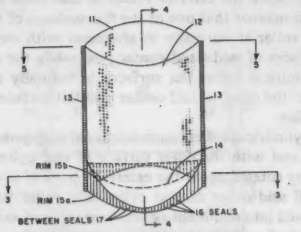
said other end wall having an abutment along upper margins thereof for restraining movement of a superimposed tray out of a stacking arrangement.

4,353,497

FREE-STANDING THERMOPLASTIC BAG CONSTRUCTION

Franz Bustin, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 85,183, Oct. 15, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,227
Int. Cl.³ B65D *33/02*
U.S. Cl. 229—55 **6 Claims**



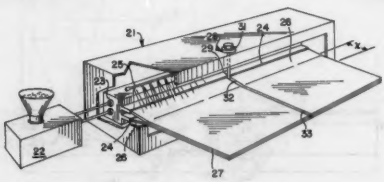
1. A bag structure of thin thermoplastic material adapted to remain in an upright position when opened comprising front and rear bag walls, an open mouth at the upper edge of said walls, heat seal seams joining said bag walls together along longitudinal edges, and at least one bottom gusset fold forming a bag bottom wall said gusset fold having front and rear gusset walls which are sealed to the adjacent bag walls utilizing a plurality of spaced apart vertical heat seals which extend upwardly from bottom edges of the bag walls and respective gusset walls in a predetermined pattern wherein said vertical seals are arranged in order of descending height from each of said longitudinal bag wall edges toward the central portion of said gusset fold, whereby when the bag is open the bag is self supporting as a result of the stiffening effect of the vertical heat seals.

4,353,498

MULTIPLE PLY COEXTRUSION

Walter P. Scarberry, St. Charles, and Charles K. Vollman, Elgin, both of Ill., assignors to Health-Ex Corporation, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,749
Int. Cl.³ B29F *3/00*; B65D *65/28, 27/10*
U.S. Cl. 229—69 **27 Claims**



1. A multiple ply coextrusion film having a tear path, comprising:

coextruded multiple plys, at least one of said plys having a tear path therein;

said tear path being an extrusion interrupted elongated void within at least one of a plurality of molten extrudates, each said molten extrudate corresponding to one of said multiple plys of the film, said extrusion interrupted elongated void having been formed while the extrudate was in a molten state and prior to combining same into a mulitple ply coextruded film;

said tear path having an overall thickness that is less than the total thickness of the multiple ply coextruded film; and

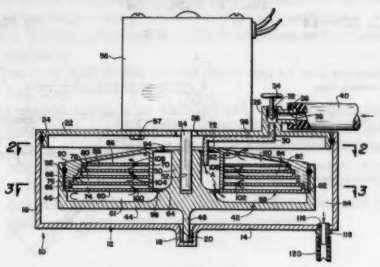
said extrusion interrupted elongated void is completely through the extrudate.

4,353,499

CENTRIFUGAL SEPARATOR

Edward Simonds, 1505 E. Kenosha, Broken Arrow, Okla. 74012

Filed Apr. 27, 1981, Ser. No. 257,732
Int. Cl.³ B04B 1/04
U.S. Cl. 233—27 7 Claims



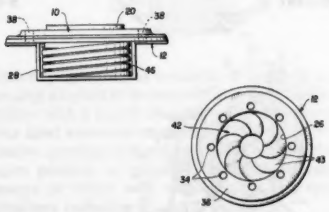
1. A centrifugal separator for a fluid stream and comprising stationary housing means, power means, drive drum assembly mens rotatably disposed within said housing means and operably connected with the power means for rotation thereby, inlet port means in communication with the interior of the drive drum assembly means for directing the fluid stream thereto, multiple fluid compartments provided in said drive drum assembly in successive downstream communication for successively receiving the fluid stream therein and centrifuging the fluid stream in each compartment during rotation of the drive drum assembly means, discharge port means provided in the drive drum assembly means in communication between the interior thereof and the interior of the housing means for delivery of separated fluid into the housing means, and discharge port means provided in the housing means for directing the separated fluid therefrom.

4,353,500

THERMOSTAT

George Brown, 317 S. Harbor Dr., Venice, Fla. 33595

Filed Feb. 26, 1981, Ser. No. 238,373
Int. Cl.³ F01P 7/02
U.S. Cl. 236—34.5 3 Claims



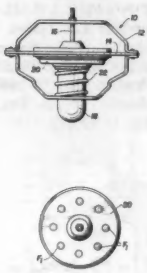
1. A thermostat, comprising:
a cap member having a first flow opening therethrough;
a seat member secured to said cap member and having a second flow opening therethrough;
a gate member mounted in said second flow opening and having a plurality of gate sections movable between open and closed positions to control the flow of cooling liquid through said gate member; and
a bimetallic helical actuating member secured to said gate member and to said seat member and being rotatable to move said gate sections in response to predetermined engine temperatures to insure efficient engine operation and fuel savings;
said cap member being provided with a plurality of third flow openings that are smaller than said first flow opening, and said seat member being provided with a plurality of fourth flow openings that are smaller than said second flow opening, said third and fourth flow openings being of substantially the same size and in adjacent axially aligned relation, and fusible plugs disposed in said third and fourth flow openings, said fusible plugs being fusible at different engine temperatures to more closely control engine temperature and effect fuel savings.

4,353,501

FUSIBLE AQUATIC DEVICE THAT WILL OVERRIDE THE FAILURE OF A DEFECTIVE THERMOSTAT OR THE LIKE WITHIN A MOTOR

George Brown, 317 S. Harbor Dr., Venice, Fla. 33595

Continuation-in-part of Ser. No. 94,079, Nov. 14, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 245,181
Int. Cl.³ F01P 7/02
U.S. Cl. 236—34.5 5 Claims



1. A thermostat for a liquid cooling system, comprising:
a seat member having a flow opening therethrough,
a closure member movable between an open position spaced from said seat member and a closed position in engagement with said seat member wherein it closes said flow opening, said closure member having a plurality of apertures therethrough,
means for biasing said closure member to the closed position,
temperature responsive means for moving said closure member to said open position against the force of said biasing means, and
fusible means in said apertures adapted to melt at different predetermined temperatures to closely control the temperature of the cooling liquid and to allow flow of cooling liquid past said closure member when it is in a closed position.

4,353,502

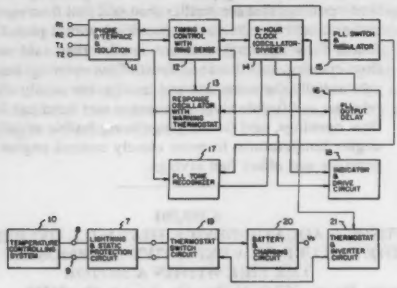
REMOTE CONTROLLING

Garrett R. Myers, Brighton, Mass., assignor to Marian B. Myers, Horseheads, N.Y.

Filed Mar. 19, 1980, Ser. No. 131,621
Int. Cl.³ H04M 11/00
U.S. Cl. 236—47 18 Claims

1. Remote controlling apparatus comprising,
terminal means for connection to terminals of a system to be controlled normally controlled by first control means,
second control means for controlling said system,
means responsive to a remote control signal for selectively connecting said second control means to said terminal means to exercise control over said system,

and timing means responsive to the occurrence of said remote control signal for enabling said second control



means to control said system only for a predetermined time interval.

4,353,503

RESILIENT MOUNTING FOR A RAIL ON ITS SUPPORT

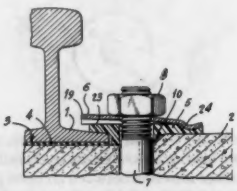
Michel Duchemin, Lambres Les Douai, France, assignor to Societe: Ressorts Industrie, Paris, France

Continuation-in-part of Ser. No. 914,086, Sep. 9, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 145,498

Claims priority, application France, Dec. 16, 1977, 77 38124

Int. Cl.³ E01B *9/30*

U.S. Cl. 238—349 **10 Claims**



1. A resilient mounting for a rail having a base flange resting on a support, said mounting comprising flexible liner means interposed between said base flange and said support and first and second rail clamp means respectively mounted on said support and engaging opposite sides of the base flange and each of said rail clamp means comprising:

(a) flexible rail restrainer means formed of material having essentially the same physical characteristics as nylon and having an upper surface and a lower surface with the lower surface engaging the upper surface of the base flange of a rail;

(b) a spring plate having upper and lower surfaces overlapping said flexible rail restrainer means and having a longitudinal edge overhanging inwardly beyond the portion of the rail restrainer engaging the base flange of the rail;

(c) clamping means extending through said flexible rail restrainer means and the spring plate for providing a downward clamping force to said spring plate; said longitudinal edge of said spring plate being parallel to and spaced above said rail and including an outer edge remotely positioned transversely from said base flange, wherein said longitudinal edge, in the unclamped state of the plate, is bowed in a plane parallel to the longitudinal axis of the rail but assumes a planar orientation upon actuation of said clamping means so that its lower surface flatly contacts the upper surface of the portion of the flexible rail restrainer means engaging the base flange so that the flexible rail restrainer forcefully engages the base flange to provide enhanced resistance to longitudinal movement of the rail.

4,353,504

HIGH PRESSURE SNOW GUN

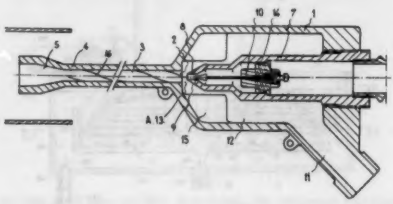
Pierre Girardin, St Herblain, and Max Duplan, Champagne au Mont d'Or, both of France, assignors to Le Froid Industriel York S.A., Paris, France

Filed Apr. 18, 1980, Ser. No. 141,425

Claims priority, application France, Apr. 20, 1979, 7910437

Int. Cl.³ F25C *3/04*

U.S. Cl. 239—14 **10 Claims**



1. A snow gun for making artificial snow by atomizing a mixture of air and water, said snow gun comprising a hollow body, a compressed air supply conduit or passageway terminated by an air injection nozzle, said injection nozzle being accommodated inside said hollow body and opening at an end into said hollow body, a pressurized water supply conduit or passageway opening into a space between said hollow body and said air supply conduit or passageway, a mixing chamber for mixing air and water communicating with the interior of said hollow body through an inlet port, said inlet port being located facing a discharge orifice of said injection nozzle, adjustment means for adjusting air flow and water flow passage into said mixing chamber, said mixing chamber being constituted by an elongated bore of a main nozzle extending in the continuation of said injection nozzle, and a divergent nozzle extending from the discharge end of said bore opening into the surrounding air.

4,353,505

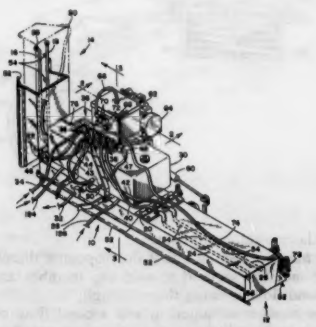
SPRAYING APPARATUS

Leon Kinder, P.O. Box AE, Denton, Tex. 76201

Filed Aug. 4, 1980, Ser. No. 174,953

Int. Cl.³ B05G *1/16*

U.S. Cl. 239—167 **9 Claims**



1. An improved drift free spraying apparatus adapted for movement in connection with a vehicle having a spray bar mounted within a bottomless, rectangular, box-type housing in communication with a fluid pump and reservoir assembly and

adapted for emitting fluid in a mist configuration upon the surface to be sprayed through nozzles provided on said spray bar, said improvement comprising:

(a) an elongated, bottomless, rectangular, box-type housing having first and second outer sections hingedly attached to a center section, each of said housings having means for passing in close proximity to non-planar areas of said surface for confining spray within said housing,

(b) an individual spray bar mounted within each section,

(c) means coupled to each spray bar for individual control of the emitting fluid to said bar,

(d) means coupled to said first and second outer sections for selectively raising and lowering each section,

(e) a second spray bar in each of said first and second outer sections,

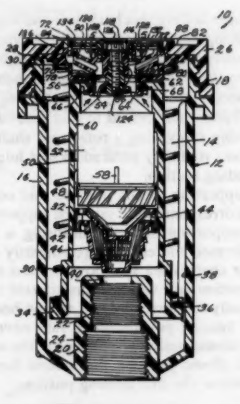
(f) at least one nozzle on the outer end of said second spray bar, and

(g) means coupled to each of said second spray bars for individual control of the emitting fluid thereto whereby raising of either one of said first and second outer sections enables selective spraying from said second spray bar nozzle to allow spraying around fence posts, hedges, ditches, and the like at increased distances and heights from and above said spraying apparatus.

4,353,506
POP-UP SPRINKLER

Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed Sep. 15, 1980, Ser. No. 187,445
Int. Cl.³ B05B 3/04, 3/08
U.S. Cl. 239—206 **22 Claims**



1. In a pop-up sprinkler assembly of the type including

a housing adapted to be installed in the ground for communication with a source of water under pressure and a sprinkler head structure mounted for movement from an inoperative position within said housing into an elevated operative position in response to the communication of a source of water with said housing, said sprinkler head structure including

rotary head means mounted for rotational movement about an upright axis, said rotary head means defining at least four passages disposed in annularly spaced relation about said axis, each of said passages having an inlet end for communication with water under pressure and an outlet end defining an upwardly and outwardly extending stream of water when the associated inlet end is communicated with water under pressure,

pattern defining plate means fixed in cooperating relation with respect to the inlet ends of said passages, and

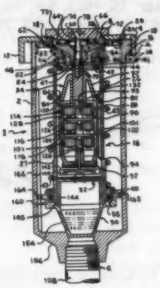
means operable in response to the flow of water under pressure from said housing through said pattern defining plate means and into the inlet end of at least one of said passages for rotating said head means about its axis of rotation so that the stream of water issuing from the outlet end of each passage into which water flows is moved so as to fall throughout a ground pattern area determined by said pattern defining plate means, the improvement which comprises

manually operable means for adjusting the fixed cooperating relation of said pattern defining plate means with respect to said rotary head means so that the orientation of the ground pattern area within which the water streams fall can be easily determined with respect to said housing where the configuration of the pattern area provided requires such orientation.

4,353,507
SPRINKLER HEAD

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Division of Ser. No. 69,965, Aug. 27, 1979, Pat. No. 4,272,024.
This application Apr. 6, 1981, Ser. No. 251,681
Int. Cl.³ B05B 3/16
U.S. Cl. 239—240 **6 Claims**



1. A sprinkler head having nozzle means for directing fluid therefrom, drive means for rotating said nozzle means in response to fluid passing through said sprinkler head, said drive means including a gear reduction drive, said gear reduction drive being mounted in a housing, a fluid passageway extending around said housing, a pressure balance vent having an extended length being placed in said housing between the interior and the exterior thereof; wherein the bottom of said housing has a first flat surface thereon, a passage extending from the interior of said housing to said first flat surface, a cover having a second flat surface engaging said first flat surface, said cover being connected at the bottom of said housing, a long spiral groove formed in one of said flat surfaces, the inner end of said groove being connected to said passage, the outer end of said groove being connected to a passageway in said cover to the exterior of said housing.

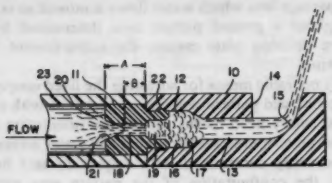
4,353,508
NOZZLE WITH PRE-ORIFICE METERING RESTRICTION

Ted Butterfield, Naperville; Lyle J. Emory, Darien, and Daniel Filicicchia, Aurora, all of Ill., assignors to Spraying Systems Company, Wheaton, Ill.

Filed Nov. 10, 1980, Ser. No. 205,276
Int. Cl.³ B05B 1/02
U.S. Cl. 239—590.3 **11 Claims**

1. A spray nozzle and pre-metering orifice insert made of a plastic material from the group including nylon comprising a nozzle having a turbulence chamber therein and a discharge orifice, a separate pre-metering orifice member of non-uniform length secured in the nozzle and discharging directly into said

turbulence chamber, said orifice member having an opening and a central passage therethrough, and means intersecting the opening to said passage at the upstream side of the orifice



member, comprising a formed slot of fixed size and shape on the upstream side of the orifice member disposed transversely of the member.

4,353,509

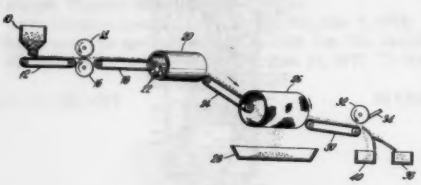
METHOD OF PREPARATION OF FIBERS AND FIBERS OBTAINED THEREFROM

Clarence L. Bostian, Jr., 153 W. 44th St., New York, N.Y. 10036

Filed Apr. 28, 1981, Ser. No. 258,439

Int. Cl.³ B02C *19/12, 23/08*

U.S. Cl. 241—24 **9 Claims**



1. A method for reclaiming fibers from peanut shells comprising:

(a) flattening the shells;

(b) milling the flattened shells to produce a fiber fraction, and a residue fraction containing dirt, dust and shell particles; and

(c) separating the fiber fraction from the residue fraction.

4,353,510

SPOOL BODY FOR HOLDING A PLASTER BANDAGE

Otto Damke, Neuwied, and Hubert F. Reutter, St. Augustin, both of Fed. Rep. of Germany, assignors to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,485

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 7930408[U]

Int. Cl.³ B65H *75/10, 75/12*

U.S. Cl. 242—118.32 **6 Claims**

4. A cylindrical spool or reel body made of plastics material for receiving a plaster of Paris bandage in roll form and having apertures passing through said spool body, the improvement in combination therewith comprising: an outwardly facing surface of said spool body made uniformly rough, a web which spans each of said apertures and extending in the longitudinal direction of said spool body, longitudinally extending ridges provided on each of said webs, each of said ridges being in alignment with said outwardly facing uniformly rough surface of said spool body, and two rows of said apertures being provided diametrically opposite one another.

4,353,511

ROLL-PAPER SETTING MECHANISM

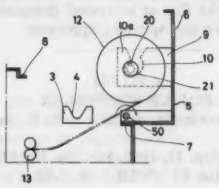
Masahiro Shimizu, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 31, 1980, Ser. No. 173,882

Claims priority, application Japan, Aug. 21, 1979, 54-115457[U]

Int. Cl.³ B65H *19/00*

U.S. Cl. 242—55.53 **4 Claims**



1. A roll-paper setting mechanism for setting a roll-paper in the paper feeding section of a housing having a pair of side walls of an associated apparatus which comprises:

a first supporting means fixed to said housing of said paper feeding section comprising a first bearing portion having an open upper end formed in said first supporting means for rotatably supporting a roll-paper shaft;

a cover means rotatably secured to said housing above said paper feeding section;

a second supporting means fixed to said cover means at a position corresponding to said first supporting means, said second supporting means comprising a second bearing portion formed therein for preliminarily supporting said roll-paper shaft when said cover means is in an open or raised position and which transfers said roll-paper shaft, preliminarily supported by said second bearing portion, to said first bearing portion when said cover means is in a down or closed position, such that when said cover means is in said closed position the second bearing portion is located below the first bearing portion.

4,353,512

APPARATUS FOR ROLLING CHAIN LINK FENCE

Herbert E. Rohrbacher, 8695 Via Santa Cruz, Whittier, Calif. 90605

Filed Jan. 14, 1981, Ser. No. 224,952

Int. Cl.³ B65H *75/00*; B65B *63/04*

U.S. Cl. 242—54 R **28 Claims**

1. An apparatus for rolling chain link fence including

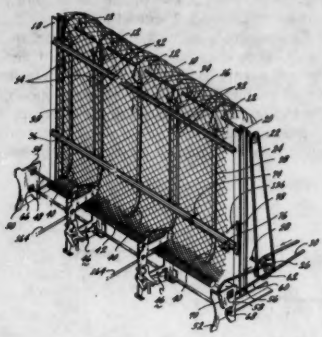
an endless belt including a free loop portion,

means supporting the endless belt and for providing movement of the endless belt in a particular direction and with the movement of the endless belt producing rotative motion in the free loop portion,

means adjacent the free loop portion of the endless belt for feeding progressive portions of the chain link fence into the free loop portion,

the free loop portion of the endless belt and the means adjacent the free loop portion supporting the progressive portions of the chain link fence to have the individual links

of the chain link fence collapse against each other to provide for a tight configuration of the chain link fence within the free loop portion, and



the rotative motion of the free loop portion of the endless belt producing a rolling of the progressive portions of the chain link fence with the individual links collapsed against each other to form a roll of chain link fence with a tight configuration and a small diameter.

4,353,513

WINDING APPARATUS

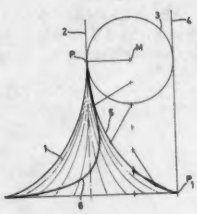
Helmut Holthoff, Düsseldorf, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Company, Hilden, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,278

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3002026

Int. Cl.³ B21C *47/00*

U.S. Cl. 242—82 25 Claims



1. In a winding apparatus for the layering of thin elongated material, especially hot-rolled wire, in loop-like windings, in which a doubly or spatially curved laying tube whose longitudinal axis forms a cone-shaped rotation body and whose peripheral speed at the outlet opening matches the entrance speed of the material rotates around a rotation axis, in which case the laying tube is also curved in the peripheral direction of the superficies of the rotation body, the improvement comprising the superficies of the rotation body being curved in an essentially concave manner in accordance with a cycloid beginning at the entrance opening of the laying tube with its vertex, the length of the cycloid resulting from a half-rotation of a rolling circle generated from top to bottom of said rotation body, and that the curvature of the laying tube in the peripheral direction of the superficies is specified by a simultaneously occurring substantially half-rotation of said rotation body around its rotation axis.

4,353,514

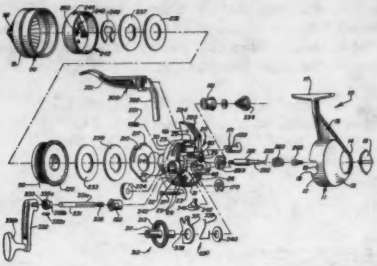
BACK SUPPORT HOUSING AND REEL BODY ASSEMBLY

Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1980, Ser. No. 218,924

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 A 2 Claims



1. A spin casting style fishing reel comprising:

a support housing having a stem extending therefrom for mounting to a fishing rod, said housing having an open end and a facing edge around said end;

a reel body having a deck plate and including a portion facing said housing, said portion having an offset ledge around the edge facing said housing;

three spaced apart bosses on the housing side of said deck plate and including aligned apertures through said bosses and said deck plate;

three spaced apart bosses on said housing and aligned with said reel body bosses;

fastening means extending through said apertures and into said housing bosses to hold said reel body bosses and housing bosses in abutting relation; and

said bosses when held together in abutting relation holding said housing facing edge in spaced apart relation from said reel body facing edge and offset ledge.

4,353,515

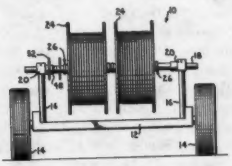
SPOOL MOUNTING ASSEMBLY AND BRAKE

David A. Weaver, N. Highway 59, and Gordon G. Bledsoe, 601 Mill St., both of Mound City, Mo. 64470

Filed Dec. 29, 1980, Ser. No. 221,026

Int. Cl.³ B65H *75/30, 75/40*

U.S. Cl. 242—86.7 3 Claims



1. Mechanism for mounting a spool on a shaft, said spool having an opening through its center larger than the shaft diameter, said mechanism comprising:

first and second bearing means each having a frusto-conical annular surface adapted to be positioned at least partially within said spool opening,

one of said bearing means being disposed on each side of said spool with said frusto-conical surfaces in facing relationship;

sleeve means adapted to be positioned over said shaft and in abutting relationship to one of said bearing means,

said sleeve means comprising first and second threaded components and means for rotating said components rela-

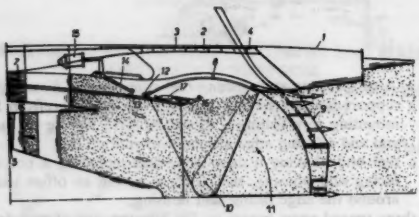
tive to each other whereby relative rotation of said components in one direction will cause said first and second bearing means to grip said spool and hold the latter against rotation.

4,353,516

THRUST REVERSER AND SILENCER ASSEMBLY OF TURBOJET ENGINES

Marcel R. Soligny, Chevilly Larue; Jean-Pierre D. J. Duponchel, Dammarie les Lys, and Rene G. Hoch, La Rochette, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Jul. 15, 1980, Ser. No. 169,151
Claims priority, application France, Jul. 24, 1979, 79 19020
Int. Cl.³ B64D *33/04*; F02K *1/54*
U.S. Cl. 244—110 B **3 Claims**



1. A thrust reverser and silencer assembly for turbojet engines located within a nacelle and combined with a dilution jet pipe which receives gases in three streams, designated the primary, the secondary and the tertiary flows, with said assembly comprising:

a thrust reverser, consisting of two half shells in the form of portions of a spherical cap,

a multitube silencer, itself composed of two half shells, placed downstream of the thrust reverser with respect to the jet flow, and concentrically to them,

two axes parallel to the same diametrical plane of the jet pipe, around which each group of half shells, one belonging to the thrust reverser and the other to the silencer, is movable,

a first series of movable flaps controlled by first cylinders, which may be moved to close the tertiary flow, when the silencer or the thrust reverser are deployed,

mechanical stops placed on a wall separating the conduits of the secondary flow and the tertiary flow, which limit the path of the half shells of the reverser and the silencer,

a second series of movable flaps, controlled by means of second cylinders, which control the principal jet flow formed by the combination of the primary flow and the secondary flow at the inlet of said assembly,

the nacelle having a screen capable of being closed by a sliding door and each group of half shells of the thrust reverser and the silencer being located, in the retracted position, in the space between the nacelle and the tertiary flow, the wall of the half shell of the thrust reverser constituting a portion of the profile of the jet pipe.

4,353,517

FLAP ASSEMBLY FOR AIRCRAFT WING

Peter K. C. Rudolph, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 7, 1980, Ser. No. 194,768
Int. Cl.³ B64C *3/48*
U.S. Cl. 244—216 **34 Claims**

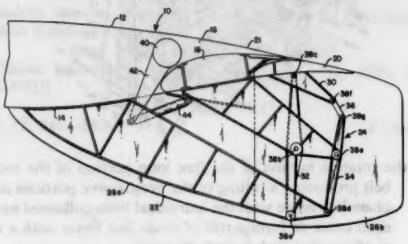
1. A flap assembly for an airfoil, said airfoil having upper and lower surfaces, a forward end and a rear end, a longitudinal axis and a transverse axis, said flap assembly comprising:

a. a mounting structure located at a first lower location at the rear end of the airfoil,

b. a fore flap having a stowed first position above the mounting structure at the rear end of the airfoil, and movable rearwardly to an extended second position,

c. an aft flap having a stowed third position above said mounting structure at the rear end of said airfoil, and movable rearwardly to an extended fourth position,

d. a common first link having a first lower portion pivotally connected to said mounting structure at a first pivot location, an intermediate portion pivotally connected to said fore flap at a second pivot location, and an upper portion



pivotally connected to said aft flap at a third pivot location,

e. a second link having a first lower portion pivotally connected to said mounting structure at a fourth pivot location spaced longitudinally from said first pivot location, and a second upper portion pivotally connected to said fore flap at a fifth pivot location spaced longitudinally from said second pivot location,

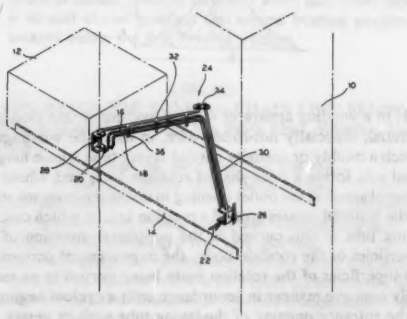
f. a third link having a first end portion pivotally connected top said aft flap at a sixth pivot location spaced longitudinally from said third pivot location, and a second end having an operative pivot connection at a seventh pivot location to said fore flap.

4,353,518

CABLE RETRACTOR

William R. Taylor, and Richard J. Gonia, both of New Berlin, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,053
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—60 **4 Claims**



1. In a cable retractor comprising:

a first end bracket for attachment to a rack;

a second end bracket for attachment to a chassis which is slidable with respect to said rack;

at least first and second cable supporting arms, said first arm

having one end pivoted to said first end bracket, said second arm having one end pivoted to said second end bracket, and the other ends of said first and second arms attached to a common pivotal linkage; and

means to attach a slack portion of a cable to said first and second arms;

the improvements wherein:

said first and second arms lie substantially in a first plane throughout their entire range of motion;

said common pivotal linkage comprises a single plate disposed in a second plane parallel to and nearly adjacent said first plane, said plate rotatably supporting spaced first and second pivot pins to which the respective ends of said first and second arms are fixed; and

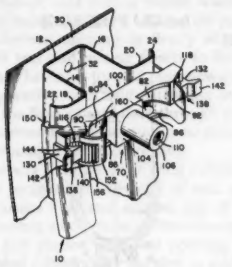
said means to attach said slack portion of said cable to said arm comprises at least two standoffs attached at spaced intervals along each arm to support said slack portion in a third plane spaced from, but parallel to, said first and second planes.

4,353,519

SUPPORT ATTACHMENT FOR STRUCTURAL STRINGERS

Patrick M. Bogart, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1980, Ser. No. 218,632
Int. Cl.³ F16L *3/24*
U.S. Cl. 248—72 **1 Claim**



1. A support attachment for structural stringers comprising:

an elongated body having a first side for extending transversely across a stringer;

a second side of said body opposite said first side;

spaced generally parallel elongated wall members extending between said first and second sides and forming respective surfaces of said opposite sides;

supporting means for securing attaching devices to said body, said supporting means being centrally positioned with respect to the elongated direction on said body and adapted to be centrally positioned transversely with respect to said stringer;

said supporting means being secured to said second side and extending between said elongated wall members for securing attaching devices to said body;

transverse end walls at each end of said body and joining said elongated wall members;

a transverse wall adjacent each respective end wall and slot means formed between each end wall and the adjacent wall;

said slot means extending through each end of said body transverse to the elongated direction and extending from said first side to said second side;

a flexible strap slidably extending through each of said slot means;

each strap having a hook at one end thereof for connecting said body to respective transverse ends of said stringer;

a latching means connected to each respective end wall adjacent said second side of said body and adjacent each respective slot means; and

a series of ratchet teeth on each of said straps for engaging said latching means to lock said straps in respective slot means when said one ends of said straps are connected on said stringer and pulled through said slot means;

said latching means each having a pawl on an inner end extending inwardly adjacent a respective slot means;

said latching means each having a lever on an outer end;

said pawl and lever being connected by an intermediate portion;

each intermediate portion forming a part of a respective end wall extending toward said first side and being flexible so as to be pivotal on said body;

each slot means having an inner transversely directed portion longer than and inwardly of an outer transversely directed portion;

each strap having a long cross section adapted to slide in said inner slot portion and having said ratchet teeth extending from said long cross section into said outer slot portion;

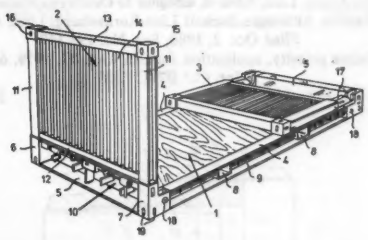
said pawl and lever being flexibly and pivotally held by said intermediate portion so that when said lever is pivoted thereon, said pawl is adapted to engage a respective ratchet to prevent movement of the strap toward said first side.

4,353,520

LARGE OPEN CARRIER WITH A FOLDABLE CARGO SUPPORTING WALL

Hadar J. E. Jansson, Wachtmeistersv 27, Helsingborg, Sweden

PCT No. PCT/SE79/00111, § 371 Date Jan. 18, 1980, § 102(e) Date Jan. 18, 1980, PCT Pub. No. WO79/01117, PCT Pub. Date Dec. 27, 1979
PCT Filed May 18, 1979, Ser. No. 189,952
Claims priority, application Sweden, May 25, 1978, 7806041; May 25, 1978, 7806042; May 25, 1978, 7806043
Int. Cl.³ B65D *19/12*
U.S. Cl. 248—346 **11 Claims**

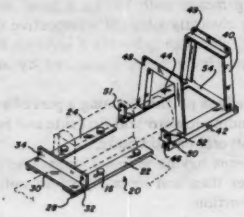


1. An apparatus comprising a loading plane and at least one wall unit, said wall unit being fixedly disposed in the loading plane for pivotal switching from a rest position, wherein said wall unit is located parallel to the loading plane, and a working position, wherein said wall unit makes substantially a right angle with the loading plane, wherein said wall unit is anchored in the loading plane by a hinge means at each of two corners, each of said hinge means comprising a shaft connected in a non-rotary manner with an end of a torsion bar, the other end of each torsion bar being disposed in a non-rotary manner in said loading plane close to said shaft of the other hinge means, such that said torsion bars cross each other and are positioned, relative to a pivotal shaft, to allow pivoting of said wall unit on said pivotal shaft, and wherein said torsion bars are tension-free when said wall unit is at a position between said rest position and said working position.

4,353,521
ANTI-THEFT DEVICE

Audivee Webb, P.O. Box 143, Fort Morgan, Colo. 80701

Filed Oct. 20, 1980, Ser. No. 198,301
Int. Cl.³ E05B 73/00; F16B 41/00; F16M 7/00, 13/00
U.S. Cl. 248—552 5 Claims



1. An anti-theft device for preventing removal of a flanged object mounted on an adjacent surface by attachment means, said device comprising:

a securing assembly including at least two securing bars overlying the flanged portion on each side of said object and attached to said adjacent surface by the same attachment means used for the flanged object;

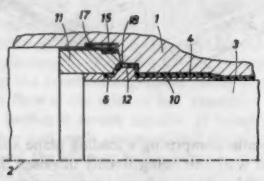
a cover assembly comprising at least two cover bars overlying said securing bars and preventing access to said attachment means, said cover bars are joined by at least one retaining loop fitting over said flanged object, said securing and cover assemblies having means to make them slideably engageable wherein said securing bars further are connected by a slide obstructor bar to prevent sliding of said cover assembly past said flanged object; and

locking means by which said securing assembly is locked to said cover assembly.

4,353,522
INJECTION MOLD FOR MAKING A SYNTHETIC THERMOPLASTIC ARTICLE HAVING A TUBULAR END PORTION

Anton Anger, Linz, Austria, assignor to Oesterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg, Linz, Austria

Filed Oct. 2, 1980, Ser. No. 193,149
Claims priority, application Austria, Oct. 11, 1979, 6616/79
Int. Cl.³ B79C 7/00
U.S. Cl. 249—144 3 Claims

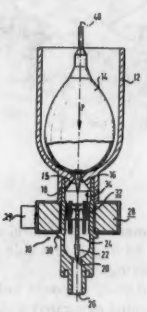


1. An injection mold for making a synthetic thermoplastic resin article having a tubular end portion with a free end and an annular section of a diameter exceeding that of the remainder of the tubular end portion axially spaced inwardly from the free end, the free end and the annular section defining an internal peripheral annular groove, the injection mold comprising an outer mold structure comprised of at least two mold members and defining an abutment surface; and a core axially slidable in the outer mold structure between a molding position and a second position, the core defining a mold cavity with the outer mold structure in the molding position to mold the tubular end portion therein, the core including an annular rib axially immovable relative thereto and defining the peripheral groove of the tubular end portion in the mold cavity, the core having an end and a mold sleeve connected to, and surrounding, the core end, the mold sleeve being axially immovable relative to the core and having an end face facing and conforming to the abutment surface, the mold sleeve end face being forced against the abutment surface upon axial sliding of the core into the molding position, the mold sleeve and core end having converging confronting surfaces defining an annular gap tapering toward the end of the core, the annular gap defining the free end of the tubular end portion in the mold cavity extending outwardly from the annular section thereof, and the core and mold sleeve axially immovably connected thereto being jointly axially slidable into the second position to permit the free end of the tubular end portion to be removed from the annular gap with elastic deformation.

4,353,523
FLOW REGULATOR

Yoram Palti, 49 Ruth St., Haifa, Israel

Filed Sep. 11, 1979, Ser. No. 74,301
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839774
Int. Cl.³ F16K 31/08
U.S. Cl. 251—65 10 Claims



1. A device for regulating the flow area of a valve for fluids comprising:

a valve housing having a fluid inlet and outlet and a valve opening;

a valve plug for opening and closing said valve opening;

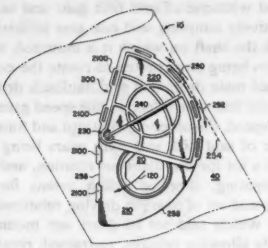
an outer magnet rotatably mounted on the outside of said valve housing, said outer magnet comprising a plurality of alternately poled, circumferentially distributed magnet segments;

an inner magnet comprising one or more magnet segments fixedly mounted on said valve plug within said valve housing, said inner magnet segments being mounted for rotatable and axial movement to move the valve plug in an axial direction when said outer magnet is moved, all of said inner magnet segments having the same pole confronting said outer magnet and being distributed for simultaneous alignment with the oppositely poled outer magnet segments to prevent the loss of magnetic flux to neighboring inner and outer magnet segments whereby the magnetic attraction between said inner and outer magnets is enhanced.

4,353,524
FLUID CONTROL GATE

Harry C. Spendlow, Sr., Erie, and William E. Houghton, Littleton, both of Colo., assignors to Agri-Flex, Inc., Wheat Ridge, Colo.

Filed Dec. 13, 1979, Ser. No. 103,290
Int. Cl.³ F16K *3/10*
U.S. Cl. 251—145 8 Claims



1. An improved fluid control gate for selective insertion through a flexible wall, said wall having a first side in contact with a fluid and a second opposing side in contact with an environment of lower pressure than the pressure of said fluid, said gate having means extending through said wall, said extending means having a formed opening therethrough, means for firmly mating into said formed opening on the fluid side of said extending means, said mating means when fully inserted into said opening being capable of causing the periphery of said wall near said formed opening to firmly abut between said extending means and said mating means to form a fluid seal, said mating means having a formed passageway therethrough, and means cooperative with said extending means for selectively reducing the flow of said fluid through said passageway from a predetermined maximum rate to no flow, the improvement to said reducing means comprising:

a first substantially flat triangular plate outwardly extending around the periphery of the end of said opening of said extending means near said second side of said wall, said first plate having a hole formed therethrough corresponding in size and aligned with said opening, said first plate being oriented substantially parallel to said wall,

a second substantially flat triangular plate corresponding in configuration to said first plate, said second plate being pivotally connected to said first plate at aligning apex corners of said plates, the peripheral edges of said first and second plates opposite said apex being formed in the shape of an arc having its radius determined in a linear line from said apex,

a fluid seal disposed around the periphery of said hole on said first plate, and

means cooperative with said arcuate peripheral edges for firmly holding said second plate in pivotal engagement against said fluid seal on said first plate.

4,353,525
ROTARY VALVE SEAL

Robert A. DiDomizio, Jr., Lansdale, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 29, 1981, Ser. No. 288,436
Int. Cl.³ F16K *1/28*
U.S. Cl. 251—174 10 Claims

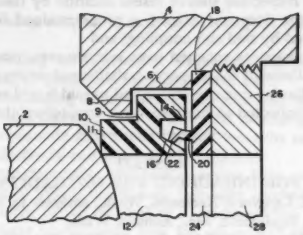
1. A valve seal for a rotary valve comprising

a valve body having a fluid passage therethrough,

a valve closure member selectively positionable in said fluid passage between a valve open state and a valve closed state and having a peripheral edge adjacent to a wall of said passage in the valve closed state,

a valve seal ring loosely captured within an annular recess in the wall of said passage and having a first side face in contact with said peripheral edge in the valve closed state and a second side face with an annular coaxial recess having a tapered side wall, and

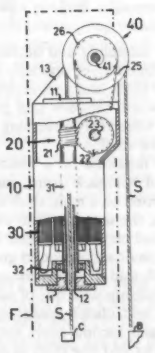
a valve seat fixedly captured in said valve body adjacent to said seal ring and spaced therefrom and having an outwardly projecting annular coaxial ridge having a tapered face on a free end of said ridge, said ridge extending substantially perpendicularly from the fixedly captured portion of said valve seat, said tapered face contacting said tapered side wall to provide a fluid-tight seal therebetween, the relationship between said valve seal ring and said annular recess allowing movement of said valve seal ring both axially and radially of said fluid passage, said movement limited by (1) the dimensions of said annular recess and (2) the degree of resiliency of said tapered face.



4,353,526
ELECTRICAL DRIVE APPARATUS FOR A VERTICALLY DISPLACEABLE BLACKBOARD

Ulrich Weidmann, Industriestrasse 13, CH-8152 Glattbrugg, Switzerland

PCT No. PCT/CH79/00101, § 371 Date Apr. 10, 1980, § 102(e) Date Apr. 9, 1980, PCT Pub. No. WO80/00299, PCT Pub. Date Mar. 6, 1980
PCT Filed Jul. 16, 1979, Ser. No. 199,513
Claims priority, application Switzerland, Aug. 10, 1978, 8518/78
Int. Cl.³ B66D *1/12, 1/20*
U.S. Cl. 254—292 8 Claims



1. An electrical drive for a vertically displaceable board, said drive comprising:

a pair of upright hollow beams flanking said board;

an electric motor in each of said beams having an upright hollow shaft;

a sheave rotatable on each of said beams about a horizontal axis;

a counterweight in each of said beams;

transmission means in each of said beams between the respective motor and sheave and including

a worm gear fixed on the respective hollow shaft, another gear meshing with the respective worm gear, and

a slip coupling connected between the respective other gear and the respective sheave for rotation of same by the respective motor so long as the torque with which the respective sheave resists rotation by the respective motor does not exceed a predetermined limit established by said slip coupling; and

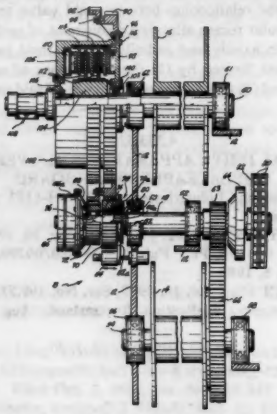
respective cables spanned over said sheaves, passing vertically through the respective shafts and worm gears, and each having one end connected to said board and another end connected to the respective counterweight.

4,353,527

SYSTEM FOR INHAULING AND OUTHAULING LINES

Frederic E. Langford, Redmond, Wash., assignor to Washington Logging Equipment, Inc., Auburn, Wash.

Division of Ser. No. 961,224, Nov. 16, 1978, Pat. No. 4,295,636.
This application Jul. 20, 1981, Ser. No. 285,154
Int. Cl.³ B66D *1/26*
U.S. Cl. 254—304 **5 Claims**



1. In a system for inhauling and outhauling lines including

a drive shaft, a prime mover operably coupled to rotatively drive said drive shaft, and a reversible transmission means operably interposed between said prime mover and said drive shaft for selectively reversing the rotational direction of said drive shaft,

a haulback drum mounted on a haulback shaft and a line wrapped on said haulback drum, and

a main drum mounted on a main shaft and a line wrapped on said main drum, the improvement comprising:

a first gear mounted on and arranged in driven relationship with said drive shaft and a second gear arranged in driven relationship with said first gear mounted on and arranged in driving relationship with one of said main shaft and said haulback shaft, and clutch means operatively associated with said first and second gears for selectively coupling said drive shaft to said one shaft in driving relationship to rotate the corresponding one of the main drum and haulback drum mounted on said one shaft to take in and pay out line at a first line speed,

a third gear mounted for rotation on said drive shaft and a fourth gear arranged in driven relationship with said third gear and mounted for rotation on the other of said main shaft and said haulback shaft, and clutch means operatively associated with one of said third gear and said fourth gear for selectively coupling said one gear in driving relationship with the shaft on which it is mounted, said third and fourth gears being constructed to rotate the corresponding one of said main drum and said haulback drum to take in and pay out line at an effective line speed less than said first line speed,

a fifth gear mounted for rotation on said drive shaft and a sixth gear arranged in driven relationship with said fifth gear mounted for rotation on the other of said main shaft and said haulback shaft, and clutch means operatively associated with one of said fifth gear and said sixth gear for selectively coupling said one gear in driving relationship with the shaft on which it is mounted, said fifth and sixth gears being constructed to rotate the corresponding one of said main drum and said haulback drum to take in and pay out line at an effective line speed greater than said first line speed, the other of said third and fourth gears and the other of said fifth and sixth gears being coupled together in a set for simultaneous rotation, and

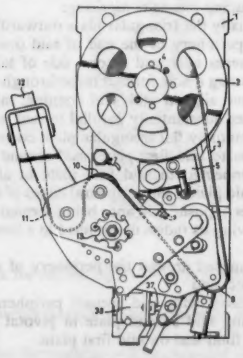
energy-dissipating, slipping clutch means for selectively engaging said set of gears in driving relationship with the shaft on which said set of gears are mounted and for selectively allowing relative, restrained, rotational movement between said set of gears and the shaft on which said set of gears is mounted so that the line speed to and from the haulback drum can be substantially equalized with the line speed respectively from and to the main drum.

4,353,528

RESTRAINING DEVICE

Vernon A. Benning, Maidenhead, England, assignor to M.L. Aviation Company Limited, Berkshire, England

Filed Jun. 11, 1980, Ser. No. 158,396
Claims priority, application United Kingdom, Jun. 22, 1979, 7921830
Int. Cl.³ B66D *1/08*
U.S. Cl. 254—360 **8 Claims**



1. A restraining device for controlling the movement of a loaded strop, said device comprising a reel means for said strop, power means for turning said reel means, and means defining a path for said strop from said reel, said path including a pair of clamping jaws for gripping said strop, spring means loading said jaws into an operative position to grip said strop, interconnecting means for interconnecting said jaws for movement together towards and away from each other, and a toggle means for producing relative movement of the jaws to clamp and release the strop, the toggle means comprising first and second toggle links pivoted together at a first pivot connection, the first link having a second pivot connection operatively engaged with one of the clamping jaws, and the second toggle link having a third pivot connection, the two toggle links being arranged with the three said pivot connections aligned to assist the spring means to clamp the jaws, and said toggle links being

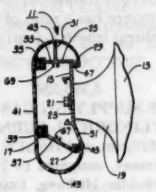
movable to move the first pivot connection out of line with the second and third pivot connections to release the jaws.

4,353,529

IMPACT ABSORBING HANDRAIL AND END CAP

Russell L. Brown, 1620 Kingsbury La., Oklahoma City, Okla. 73116

Filed Nov. 13, 1979, Ser. No. 93,832
Int. Cl.³ E04H 17/14
U.S. Cl. 256—59 19 Claims



1. A handrail comprising:

an elongated, substantially rigid retainer of substantially uniform transverse cross section and having, in cross section:

a medial portion;

a retainer flange portion at one end of the medial portion;

a T-shaped handgrip portion disposed at the other end of the medial portion, said handgrip portion having:

a substantially monoplanar first support member; and

a substantially monoplanar second support member extending substantially normal to said first support member; and

an elongated trim piece mounted on the retainer and made of impact-resistant resilient material adapted to flex toward the retainer upon impact, said trim piece having a substantially uniform cross section along its length, and further including, in transverse cross section:

a trim piece medial portion spaced from the medial portion of the retainer and including first and second ends;

a handgrip portion at one end of the trim piece medial portion; and

a flange portion at the other end of the trim piece medial portion engaging the retainer flange portion of the retainer; and

said first support member providing substantially rigid support of the trim piece with respect to a vertically downwardly directed force by contact with the handgrip portion of the trim piece along a line extending the length of the handrail when the handrail is in use and mounted upon a wall.

4,353,530

METHOD AND APPARATUS FOR AUTOMATICALLY PUNCHING THE TUYERES OF A CONVERTER

Yukio Iyama; Masao Fujita, and Nobuhiro Higashiiriki, all of Saganoseki, Japan, assignors to Nippon Mining Company Limited, Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,690
Claims priority, application Japan, Jul. 23, 1979, 54-92665
Int. Cl.³ F27B 7/20; C21C 5/46
U.S. Cl. 266—45 5 Claims

1. A method for punching the tuyeres of a converter having a longitudinal axis with the punching rods of a mechanical puncher mounted on a carriage running on rails including detectable elements provided respectively for said tuyeres of said converter and provided adjacent said tuyeres of said converter, and non-contacting type detector means mounted on said carriage comprising the steps of:

(a) setting a vertical position and orientation of said punching rods of said mechanical puncher so as to render said punching rods parallel to the axes of said tuyeres;

(b) providing a signal to move said carriage on said rails in a direction parallel to said axis of said converter;

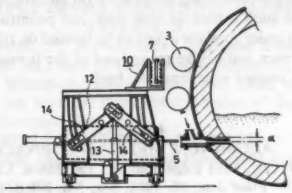
(c) processing output signals from said non-contacting type position detector means by control means to determine a position of said carriage wherein the punching rods of said mechanical puncher are aligned with respective aimed tuyeres;

(d) providing a signal to stop said carriage in the said position;

(e) providing an instruction signal to said mechanical puncher to punch said aimed tuyeres, and

(f) acknowledging termination of said punching operation to move said carriage so as to shift said punching rods into alignment with next aimed tuyeres, whereby said tuyeres are selectively and successively punched,

wherein said detectable elements comprise light intercepting plates each of which has at least one light transmission hole respresentative of the number of a corresponding tuyere, at least one light transmission hole for controlling the running speed of said carriage on the rails, and at least one light transmission hole for finely adjusting the position of said carriage, and wherein said non-contacting type detector means comprises a photoelectric tube device comprising light emitting units and light receiving units arranged to be positioned opposite one another on opposite sides of said light intercepting plates.



5. A device for controlling the position of a carriage of a mechanical puncher running on rails for punching the tuyeres of a converter comprising: a plurality of light intercepting plates, one of said light intercepting plates being provided for each of said tuyeres at a position adjacent the corresponding tuyere, each of said light intercepting plates having at least one light transmission hole representative of the number of the corresponding tuyere, at least one light transmission hole for controlling the running speed of the carriage, and at least one light transmission hole for finely adjusting the position of said carriage; a plurality of light emitting elements coupled to be moved with said carriage, said light emitting elements directing light towards said light intercepting plates; and a plurality of photoelectric detector means movable with said carriage and disposed upon a side of said light intercepting plates opposite said light emitting means.

4,353,531

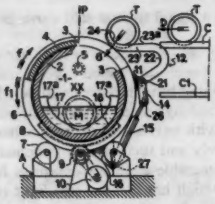
PROCESS AND INSTALLATION FOR THE HANDLING AND HEAT TREATMENT OF CAST IRON OR STEEL PIPES AND TUBES

Michel Pierrel, Pont A Mousson, and Guy Mertzweiller, Blenod les Pont a Mousson, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Jul. 24, 1980, Ser. No. 172,038
Claims priority, application France, Aug. 3, 1979, 79 19940
Int. Cl.³ C21D 1/46
U.S. Cl. 266—120 12 Claims

1. An installation including a furnace of a generally cylindrical shape, containing a treatment bath of molten metal, means for heating the treatment bath, rollers for rotatably supporting the furnace wherein the furnace is rotatable around a longitudi-

nal axis of said furnace, handling means for introducing and removing pipes through an opening in the furnace, and means for imparting an angular movement to the furnace around its longitudinal axis, characterised in that, on the internal wall of the furnace, rolling surfaces are provided which are directed laterally and are of concave profile, for supporting a pipe



resting thereon, and wherein the handling means comprise means for retaining and transferring a pipe, the retaining and transferring means being articulated on an external wall of the furnace in such a manner that they can penetrate within the furnace in order to place a pipe to be treated on rolling surfaces of the furnace and can be moved out of the furnace in order to remove a treated pipe from the bath.

4,353,532

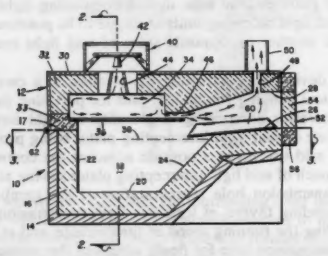
ALUMINUM MELTING FURNACE

Dudley W. Jay, 1051 Edgemont St., La Habra, Calif. 90631

Filed Jun. 29, 1981, Ser. No. 278,831

Int. Cl.³ F27B *3/20*

U.S. Cl. 266—242 **12 Claims**



1. In a furnace apparatus, the combination comprising:

a bottom housing having a melting chamber and an inclined hearth portion above the molten bath level of said melting chamber;

a top cover assembly hingedly coupled to said bottom housing, said top cover assembly including:

(a) a combustion chamber having an open bottom formed therein, said open bottom having an area parallel to the melting chamber of generally the same dimension,

(b) burner means mounted on said top cover assembly for providing flame to the interior of said combustion chamber,

(c) silicon carbide means substantially closing said bottom opening of said combustion chamber, said silicon carbide means being in spaced generally parallel relation to the molten bath level with said top cover assembly closed, and

(d) aperture means within said combustion chamber oriented toward said hearth portion for directing flue gases thereat for preheating ingots of metal positioned thereon.

4,353,533

BOTTOM TUYERES IN AN OXYGEN TOP-BLOWN CONVERTER

Tatsukichi Chino; Takuo Imai; Masaaki Tsukamoto; Ryuichi Asaho; Nagayasu Bessho, and Kyoji Nakanishi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 17, 1981, Ser. No. 234,919

Claims priority, application Japan, Feb. 18, 1980, 55-18188[U]

Int. Cl.³ C21C *5/58*

U.S. Cl. 266—265 **5 Claims**

1. In a bottom tuyere usable for blowing an agitating gas into molten steel in an oxygen top-blown converter, the improvement wherein said tuyere has a ratio of blow sectional area S (cm^2) to inner peripheral length L (cm) of not more than 0.17.

4,353,534

APPARATUS FOR SUPPLYING GAS TO A REVOLVING CYLINDRICAL FURNACE

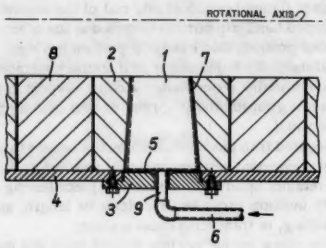
Wilhelm Janssen, Mülheim, and Henri F. Seelig, Essen, both of Fed. Rep. of Germany, assignors to Fried. KRUPP Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,535

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952275

Int. Cl.³ C21B *7/16*

U.S. Cl. 266—270 **6 Claims**



1. A device for supplying gas to a revolving cylindrical furnace having an axis of rotation and a furnace mantle with a fireproof lining, said device comprising in combination therewith gas-permeable bricks provided over the length of said rotary axis in the region of said fireproof lining.

4,353,535

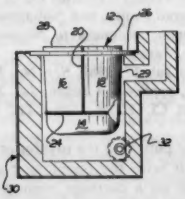
CRUCIBLES FOR MOLTEN MAGNESIUM AND METHOD OF FORMING

Kenneth J. Humberstone, Pepper Pike, Ohio, assignor to The American Tank & Fabricating Company, Cleveland, Ohio

Filed Dec. 29, 1980, Ser. No. 220,741

Int. Cl.³ C21B *3/00*; C22B *7/00*

U.S. Cl. 266—275 **9 Claims**



1. A crucible for containing molten magnesium comprising a side wall and a bottom wall defining a container like structure with an inside surface and an outside surface; said side wall and said bottom wall being formed of ferritic stainless steel having

the thickness of steel plate; the side wall and the bottom wall being joined to each other by weld material which extends completely through the crucible from the inside surface to the outside surface; and weld material being compatible with the ferritic stainless steel forming the side wall and said bottom wall, at least the portion of the weld material at the inside surface being substantially free of materials that would contaminate molten magnesium, and the weld material being essentially free of cracks.

4,353,536

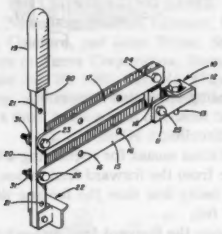
MITER CLAMP

Peter Mazzotta, 424 Union Ave., Kittanning, Pa. 16201

Filed Feb. 4, 1981, Ser. No. 231,491

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—94 **5 Claims**



1. A clamp for a miter square of a table saw or the like for engaging the leading edge of a workpiece comprising,

a base having a downwardly extending plug for rotatably securing the base to the miter square, said base having two upstanding flanges with bores therein for receiving a pin perpendicular to said flanges,

a first spanning arm having a plurality of spaced bores along the length thereof with a base end bore near the one end of the first spanning arm, said spanning arm rotatably secured by a pin through said base bore and the bores in the base flanges,

a short riser arm having openings near each end thereof, said short riser arm rotatably held to the base by the same pin that holds the first spanning arm rotatably thereto,

a second spanning arm substantially identical to the first, said second spanning arm rotatably secured to the end of the short riser arm away from the base by a pin passing through bores in the ends of each,

an elongate upstanding gripper arm having a handle at one end and a shoe at the other with a plurality of bores therebetween, said gripper arm rotatably secured to the first and second spanning arm by a pair of removable pins placed in a selectable pair of bores on the gripper arm and in selectable bores in each spanning arm whereby pressing the handle in a direction along the spanning arms and away from the base advances the miter square while forcing the shoe against the workpiece thus clamping the workpiece against the miter square.

4,353,537

SECURING AND CLAMPING DEVICE

James Koufos, 22188 Harrisburg Westville Rd., Alliance, Ohio 44601

Filed Mar. 30, 1981, Ser. No. 248,875

Int. Cl.³ B25B *1/24*

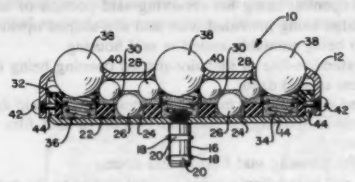
U.S. Cl. 269—266 **10 Claims**

1. A clamping device, comprising:

a hollow casing having top and bottom portions;

a plurality of balls maintained within said casing in restricted movable engagement with each other, said balls being maintained within said casing in layers, a first layer in contact with said top portion and a second layer in contact with said bottom portion, and an intermediate layer therebetween; and

means associated with the balls of each of said layers for



restricting lateral movement of said balls within their respective layers, said means comprising first and second mats having holes therein for respectively receiving said second and intermediate layers of balls.

4,353,538

INPUT-OUTPUT DEVICE FOR PHOTOGRAPHIC FILM MATERIALS

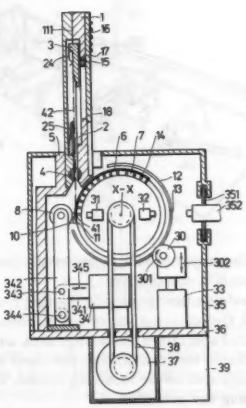
Christhard Deter, 27, Brehmstrasse; Wolfgang Schaller, 7/5 Lobensteiner Str., both of Gera; Rudolf Schönfeld, 10, Goethestrasse, Münchenbernsdorf, District of Gera, and Klaus Haak, 24, Am Stadion, Hermsdorf, District of Gera, all of German Democratic Rep.

Filed Feb. 5, 1981, Ser. No. 231,723

Claims priority, application German Democratic Rep., Feb. 1, 1980, 218794

Int. Cl.³ B65H *5/22*

U.S. Cl. 271—3 **4 Claims**



1. An input/output device for photographic film material, comprising

a cartridge,

a film material being a photographic sensitive sheet,

a film support being displaceably arranged in the interior of said cartridge between two end positions,

an operation member externally arranged on said cartridge and being connected to said film support,

a clamping means being provided on said film support for clamping said film material to said film support,

a slot shaped opening being provided in said cartridge for film input/output,

a light-stop for closing said slot-shaped opening,

a release means in said cartridge in the vicinity of said light stop,

said release means being for at least partially releasing said clamping means,

a light-tight housing,

an opening being provided in said housing,

said opening being for receiving said portion of said cartridge being provided with said slot-shaped opening,

a drum being rotatably seated in said housing,

an extension-line of said slot-shaped opening being the tangent to said drum,

an arrest and clamping means being connected to said drum for a defined holding of one end portion of said film to said drum,

a roll for pressing said film to said drum,

said roll being displaceable at right angles to the surface of said drum,

a first means for holding said film to and releasing said film from said drum, and

a second means for definedly rotating said drum in said housing.

4,353,539

PROCESS FOR POSITIONING A SUPPLE PIECE IN SHEET FORM ON A SUPPORT SURFACE AND HANDLING INSTALLATION APPLYING SAID PROCESS

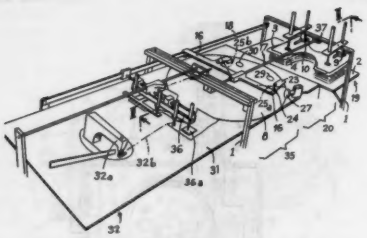
Joël Doyen, Ste Savine, and Jean P. Raisin, Troyes, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed May 9, 1980, Ser. No. 148,508

Claims priority, application France, May 18, 1979, 79 12802

Int. Cl.³ B65H *5/10, 9/20, 5/13*

U.S. Cl. 271—10 **11 Claims**



2. A handling apparatus for positioning a sheet of material on a receiving station comprising;

a frame having a storage area for storing unaligned sheets of material, the receiving station being mounted on the frame and spaced apart from the storage area, and transfer means on the frame for transporting the sheet of material from the storage area to the receiving station, the improvement comprising the provision of:

the transfer means comprising at least two, spaced-apart gripping means for gripping the sheet and for releasing the sheet independently of each other and transport means for moving the gripping means to move the sheet of material from the storage area to the receiving station when the gripping means is gripping a sheet;

at least two detecting means on the frame at the receiving station for detecting the passage of a particular portion of the sheet over each detecting means each detecting means being operatively associated with a corresponding one of the gripping means,

control means between the gripping means and the detecting means for causing each of the gripping means independently to release the sheet when the corresponding detecting means detects the passage of the predetermined portion of the sheet.

4,353,540

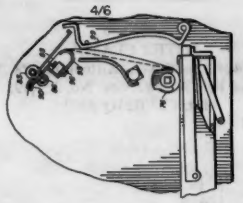
SHEET FEEDER WITH PIVOTABLE BAFFLE

Jack Beery, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1980, Ser. No. 183,690

Int. Cl.³ B65H *9/06, 9/00*

U.S. Cl. 271—10 **11 Claims**



1. A sheet feeding apparatus comprising

a forward feed means to feed a sheet from a sheet supply in a forward direction;

a sheet registration means for registering a sheet being fed, the distance from the forward feed means to the registration means being less than the feeding dimension of the sheet being fed;

means to activate the forward feed means to feed said sheet in a forward direction toward said registration means and to form a buckle in said sheet between said forward feed means and said sheet registration means,

sheet guide means mounted between said forward feed means and said registration means, said guide means comprising a baffle pivotally mounted to be articulated within the path of the sheet being fed such that when it is contacted by the short side edge of the sheet buckle and initiates the placement of tension on that edge of the sheet it articulates simultaneously reducing the tension on that edge of the sheet buckle and advancing toward contact and the initiation of tension with the other side edge of the sheet buckle to thereby tend to equalize tension on both edges of the sheet.

4,353,541

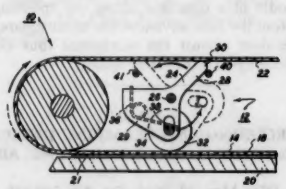
SELF ENERGIZING COPIER DOCUMENT PRESSURE ROLL

William J. Parzygnat, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 24, 1980, Ser. No. 190,113

Int. Cl.³ B65H *5/02*

U.S. Cl. 271—275 **12 Claims**



1. In a copier document handling apparatus for feeding original document sheets to and from a registration position at an imaging station of a copier with a reversible direction of motion document feeding belt means having one flight of said belt means closely overlying the imaging station for document feeding and a second flight of said same belt means spaced from said first belt flight, and pressure means for applying

pressure to an area of the back of said first belt flight, which pressure is changed for one direction of motion of said belt means, the improvement comprising:

actuating means positioned to frictionally engage and be moved by said second belt flight, and

lever means connecting said actuating means to said pressure means so as to automatically pivot said pressure means into said first belt flight solely by said movement of said actuating means by motion of said second belt flight in one direction so that said pressure means is self energized automatically in response to the reversal of direction of said second belt flight to apply substantial pressure to said first belt flight only in said one direction of motion of said second belt flight.

4,353,542

SHEET COLLECTION APPARATUS AND SORTERS INCORPORATING SAME

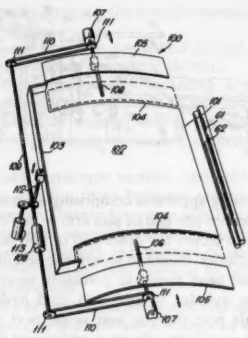
Clifford Knight, Newnham; William Gilmour, Gloucester; Bernard F. Page, Coleford, and John Bilton, Stroud, all of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1980, Ser. No. 172,497

Claims priority, application United Kingdom, Jul. 27, 1979, 7926266

Int. Cl.³ B65H *39/11*

U.S. Cl. 271—294 **5 Claims**



1. In a sorter comprising a generally-vertically arranged array of bins, a feed throat for delivering sheets to the bins, and means for vertically indexing the bins past the feed throat to receive sheets in turn, the improvement comprising retractable support means at the throat for supporting any sheets in a said bin opposite the throat during delivery of a sheet thereto whereby the sheet enters the bin below the support means.

4,353,543

SORTER CONNECTION APPARATUS

Sunao Ikeda, Yokohama; Tamaki Kaneko, Fujisawa; Kunio Hibi, Yokohama; Tugio Okuzawa, Tokyo; Yohtaro Kakitani, and Hideo Kikuchi, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Japan

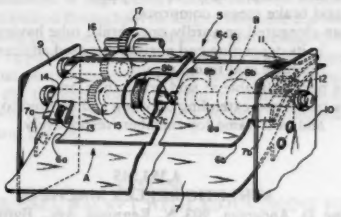
Filed Sep. 19, 1980, Ser. No. 188,945

Claims priority, application Japan, Sep. 28, 1979, 54-134392

Int. Cl.³ B65H *29/54*

U.S. Cl. 271—306 **4 Claims**

1. In a sorter connection apparatus disposed between a copying machine and a sorter for individually feeding copy sheets discharged from the copying machine into the sorter, the improvement comprising a lower guide plate connected to a sheet discharge outlet of said copying machine at its inlet side and to an inlet portion of said sorter at its outlet side, an upper guide plate located above said lower guide plate and detachably mounted to said lower guide plate through a hook member fixed to a top side of said lower guide plate near an upstream end of said upper guide plate along the copy sheet transport direction and engage-disengage means fixed to said lower guide plate top side near a downstream end of said upper guide plate, a sheet transportation roller made of an elastic foam material provided around at least its peripheral surface and abutted against said upper guide plate with some amount



of deformation that is enough to feed the copy sheet with rotation of said roller during normal operation, but to cause said roller to slip with respect to the copy sheet without advancing or crumpling the sheet when the copy sheet is subjected to braking action at the forward downstream end thereof while said roller rotates for feeding the copy sheets and drive means for rotating said roller.

4,353,544

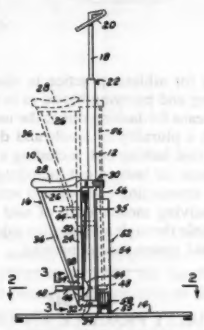
POLE SUPPORTED BICYCLE-TYPE EXERCISER

W. Don Wiley, P.O. Box 66, Foster, Okla. 73039

Filed Nov. 13, 1980, Ser. No. 206,585

Int. Cl.³ A63B *23/04*

U.S. Cl. 272—73 **2 Claims**



1. A leg and arm muscle exerciser, comprising:

an upright pole having handle bars at its upper end;

frame means mounted on said pole for vertical sliding movement relative to said pole,

said frame means including an upright frame having top and bottom members respectively surrounding an intermediate portion of said pole, and,

first and second rollers respectively journaled by said frame top and bottom members on diametrically opposite sides of said pole;

a seat mounted on said frame means;

a reel having an axle projecting laterally of opposing sides of and journaled by said frame for angular rotation about a horizontal axis;

an elongated flexible member secured at one end to said reel and secured at its other end to an intermediate portion of said pole spaced above said reel;

foot pedal means secured to said reel for angularly rotating said reel in a winding up and paying out action of said flexible member on said reel,

said foot pedal means including a crank arm secured at one end portion to each end of said reel axle forming a cooperating pair of crank arms projecting in opposing directions, and,

a foot pedal secured to the other end portion of each said crank arm; and,

brake means for retarding downward movement of said frame means relative to said pole,

said brake means comprising,

an elongated upwardly open brake tube having an orifice in its depending end portion disposed adjacent said pole opposite said frame means,

a piston slidable in said brake tube, and,

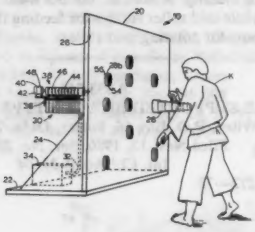
a piston rod extending between and secured to said piston and said frame top member, respectively.

4,353,545

ATHLETIC REFLEX MACHINE

Tyrone D. Anderson, 903 N. Kenwood Ave., Baltimore, Md. 21205

Filed Mar. 3, 1981, Ser. No. 239,904
Int. Cl.³ A63B *69/34*
U.S. Cl. 272—76 **4 Claims**



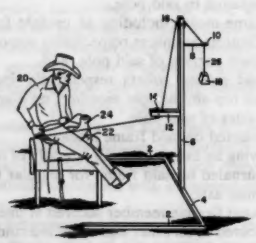
1. A system for athletic practice to sharpen the skills of a user in avoiding and parrying blows as in Karate and the like, comprising: means for lashing out at the user with a succession of blows from a plurality of levels and directions, means for programming said lashing out, including a plurality of valving means, the means for lashing out including a plurality of strikers, means for connecting each of said strikers for response to a respective valving means, each of said strikers including a bellows inflatable through a respective said valving means and a respective said means for connecting.

4,353,546

DALLY PRACTICE APPARATUS

James J. Rhoades, 7147 W. Country Gables, Peoria, Ariz. 85345

Filed May 21, 1979, Ser. No. 40,711
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **3 Claims**



1. A dally practice apparatus, comprising: an immovable saddle supported above an apparatus support surface and having a saddle horn for permitting a person to assume the posture of a horse rider;

a rope having one portion accessible to said person in said saddle and a

load means including a weight connected to said rope for loading said rope at a portion thereof spaced from said one portion so that said person in said saddle can practice a dally with said rope being maintained in tension;

a first roller coupled to said rope intermediate said portions and further having a fixed location with respect to said saddle;

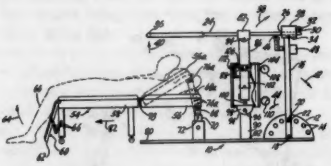
said rope having a portion located between said first roller and said saddle at a location below the upper limit of said saddle horn.

4,353,547

EXERCISING APPARATUS

Charles Jenkinson, 150 Farley Ave., Fanwood, N.J. 07023

Filed Aug. 25, 1980, Ser. No. 181,021
Int. Cl.³ A01B *21/00*
U.S. Cl. 272—130 **10 Claims**



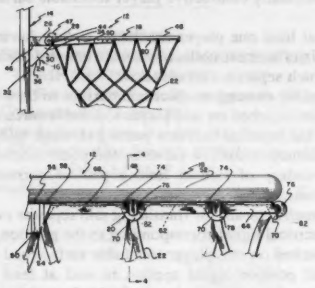
1. An exercising apparatus comprising an arm, a post, means to pivotably secure one end of said arm to one end of said post, a base, means to secure the other end of said post to said base, a hydraulic cylinder, means to secure one end of said hydraulic cylinder to said base, means to pivotably secure the piston of said hydraulic cylnder to said arm, said hydraulic cylinder having a single port therein, said single port communicating with a first oil containing chamber within said cylinder, a pipe, said pipe communicating with said port, an oil receiving tank, said pipe communicating with said oil receiving tank, a second oil receiving chamber disposed within said cylinder, said first and said second oil receiving chambers hydraulically separated by a slidable piston portion of said cylinder, a rubber-like membrane, said rubber-like membrane disposed within said cylinder, a closed air receiving chamber disposed in said cylinder for containing air therewithin, the interior portions of said air receiving chamber separated from the interior portions of said second oil receiving chamber by said rubber membrane, means to selectively positively pressurize and impose a partial vacuum of said air at a fixed selected air or vacuum pressure within said air receiving chamber only when said slidable piston portion is disposed in a stationary position and at varying decreasing positive pressure levels and increasing partial vacuum in accordance with the position of said slidable piston portion along the length of said cylinder intermediate said stationary position and said pipe, means to independently control the rate of flow of hydraulic fluid from said first oil receiving chamber into said tank and from said tank to said first oil receiving chamber, said means to control including a multi-orifice plate, said multi-orifice plate having a plurality of different size orifices therein, a pair of plate contacting blocks, said pair of blocks selectively engaging one of said orifices, whereby the rate of flow of said hydraulic fluid from said first oil receiving chamber into said tank may be increased when the size of said orifice is increased.

4,353,548

BASKETBALL GOAL ASSEMBLY

Kenneth J. Mahoney, Dorrance, Kans. 67634

Filed Dec. 12, 1980, Ser. No. 215,647
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **7 Claims**



1. A basketball goal assembly adapted to be connected to a basketball backboard member, comprising:

(a) a basic support assembly connectable to the backboard member;

(b) a rim assembly having a rim member secured to said basic support assembly;

(c) a net support assembly connected to said rim assembly having a net member connected thereto;

(d) said net support assembly including a net connector member secured to a lower area of said rim member;

(e) said net connector member having dependent connector sections secured thereto to receive a portion of said net member;

(f) each of said connector sections and said rim member forming an opening there between receiving portion of said net member therein from one side thereof;

(g) said net support assembly further including an anchor member trained through said portion of said net member from the other side of said opening to provide vertical support thereto; and

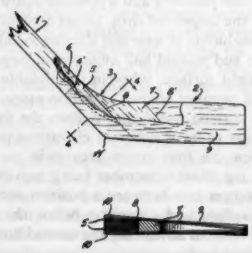
(h) said portion of said net member and said anchor member within respective ones of said openings of a conjoint size to fill the area in said opening to prevent insertion of a person's finger therein.

4,353,549

HOCKEY STICK

Marcel Goupil, 88 Gall Blvd., Drummondville, Canada (J2C 1H6), and Leo Tessier, 1 Guevremont St., Drummondville, Canada (J2B 2H2)

Filed Dec. 29, 1980, Ser. No. 225,243
Claims priority, application Canada, Dec. 11, 1980, 366588
Int. Cl.³ A63B *59/14*
U.S. Cl. 273—67 A **12 Claims**



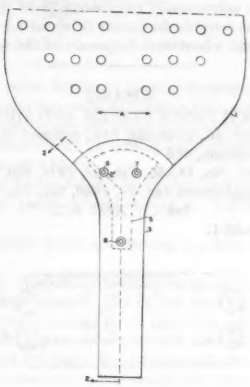
1. A handle for a hockey stick, said handle being elongated and straight and having a rectangular cross-section defining a pair of opposite wider lateral faces and a pair of opposite narrower faces, said handle having a substantially uniform cross-section over the major portion thereof and a progressively-tapering terminal portion, the taper of said terminal portion being across said narrower opposite faces, said handle being made of a core of low density wood and of two groups of lateral laminations of high density wood between which said core is sandwiched throughout its length, said core and laminations adhering to one another, said lateral laminations defining said wider opposite faces, the core section which extends in said terminal portion tapering across said narrower opposite faces, and the thickness of each group of laminations across said narrower faces being substantially uniform throughout the length of said handle.

4,353,550

PADDLE BALL RACKET WITH ADJUSTMENT FOR FLEXING

Andrew Krosnick, 2404 Deerfield Rd., Far Rockaway, N.Y. 11691

Filed Feb. 11, 1981, Ser. No. 233,673
Int. Cl.³ A63B *59/00*
U.S. Cl. 273—67 R **3 Claims**



1. Paddle ball racket comprising:

a paddle member having a handle portion,

first and second plates shaped like the handle portion, the first and second plates being mounted on first and second sides of the handle portion,

first and second laterally spaced screws mounted in the upper portion of the plates and a third screw mounted on the lower portion of the plates to squeeze the plates together against the handle portion of the paddle,

whereby the screws may be adjusted to adjust the flexibility of the paddle.

4,353,551

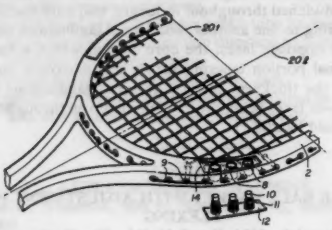
TENNIS RACKET WITH FRAME MOUNTED OSCILLATABLE WEIGHTS

Simon Arieh, Geneva; Jean-Pierre Budliger, Onex, and Guy Courvoisier, Geneva, all of Switzerland, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 61,052, Jul. 26, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 177,993
Int. Cl.³ A63B *49/04*
U.S. Cl. 273—73 R **5 Claims**

1. An improved tennis racket having a predetermined fundamental vibrational frequency comprising a frame head, a throat, a handle and strings across the frame head and including dynamic weights on the frame head for expanding the

center of percussion in the plane of the strings, improving angular stability and for initially absorbing ball impact energy and thereby damping impact vibrations on the racket but then restoring at least a portion of the absorbed impact energy to the racket while the ball is still contacting the strings characterized in that the weights are coupled to the racket frame head



by elastic means at locations on both sides of the longitudinal axis of the frame head between the racket throat and the transverse axis of the head, said elastic means having a predetermined elasticity and orientation such that the weights oscillate in a direction substantially perpendicular to the plane of the strings with an intrinsic frequency of about 1.4–2 times that of the fundamental vibrational frequency of the racket.

4,353,552

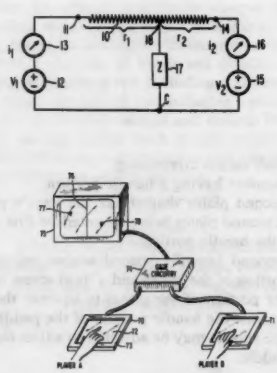
TOUCH PANEL SYSTEM AND METHOD

William Pepper, Jr., Bethesda, Md., assignor to Peptek, Incorporated, Bethesda, Md.

Division of Ser. No. 14,450, Feb. 23, 1979, Pat. No. 4,293,734. This application Jan. 29, 1980, Ser. No. 116,502

Int. Cl.³ A63F *9/22*

U.S. Cl. 273—85 G **11 Claims**



1. In a video game system having a visual display, electronic game generating means for generating control signals for said visual display according to the game being played including at least one player controlled game element, at least one player controlled signal generator, said electronic game generating means having input means for receiving control signals from said player controlled signal generator and controlling the position of said player controlled game element in said visual display, at least one player touchable electrically conductive surface, said at least one player touchable electrically conductive surface being adapted to be touched by one or more player's fingers, and means for electrically sensing the position of said player's finger on said electrically conductive player touchable surface and producing a position signal corresponding thereto which position signal is applied to said at least one player control signal input means of said electronic game generator so as to control the position of the player's game element in said visual display, the improvement in said means for electrically sensing the position of said player's finger on said electrically conductive player touchable surface comprising,

said at least one player touchable surface having at least a pair of current collecting means on said surface through which separate currents flow,

means for causing an electrical current to flow through the point touched on said player touchable surface as the sum of the separate currents passing through said electrically conductive surface between the point touched and each boundary of said at least a pair of current collecting means, and

ratiometric means for translating said separate currents to an electrical signal corresponding to the position of the point touched on said player touchable surface and constituting said position signal applied to said at least one player control signal input means of said electronic game generator.

4,353,553

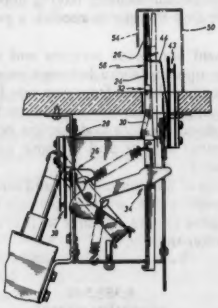
DROP TARGET ASSEMBLY FOR PINBALL GAME

Edward P. Krynski, Downers Grove, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.

Filed Feb. 17, 1981, Ser. No. 234,731

Int. Cl.³ A63D *3/02*

U.S. Cl. 273—121 R **5 Claims**



1. In a flipper-type pinball game machine of the type having an inclined playfield which supports a rolling ball and one or more drop target assemblies, each drop target assembly having a target member which extends through an opening in the playfield to define a ball engageable target area and which is movable to advance the target area between a position above the surface of the playfield and a position below the surface of the playfield, the improved drop target assembly comprising:

(a) means, including at least one slidable member, defining at least first and second ball engageable target areas above the playfield surface, wherein the slidable member is an elongated member having a portion extending above the playfield surface and which defines the first and second target areas to be at different elevations above the playfield when the first target area is in an above-surface position, the slidable member being movable to advance the first target area between a position above the surface of the playfield and a position below the surface of the playfield without advancing the second target area below the playfield surface;

(b) a mechanism for moving the one slidable member upon ball engagement of the first target area, thereby advancing

the first target area to the below-surface position and providing said second target area for ball engagement; and

(c) a set of switch contacts disposed in association with the elongated member on the side thereof opposite ball engagement and at an elevation to enable ball engagement of either the first or second target areas to actuate the switch contacts.

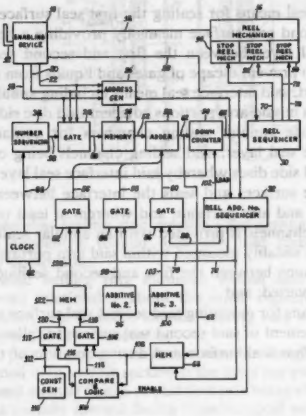
4,353,554
ELECTRONIC RANDOM DELAY GENERATOR FOR GAME DEVICES OR THE LIKE

Laren D. Fisher, Round Lake Park, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 970,241, Dec. 18, 1978, abandoned. This application Sep. 17, 1980, Ser. No. 188,039

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—143 R **22 Claims**



1. Apparatus for use in a game device of the type which has at least one set of symbols that sequentially appear in a viewing area when said set is placed in motion and which has at least one symbol in said viewing area when movement is terminated, comprising:

means for generating at least one enabling signal in response to a player playing said game device;

means for initiating movement of said set of symbols in response to one of said enabling signals;

means for generating a clock signal;

means for cycling through a group of numbers and generating an output signal corresponding to one of said numbers in response to receiving certain ones of said enabling signals and being driven by said clock signal;

means for storing each of said outputs from said cycling means;

means for generating a first signal indicative of a first additive value, said first additive value generating means comprising means for generating a signal corresponding to a first minimum value, means for storing the value of the first additive value from the preceding play of the game device, and means for comparing the preceding play additive value with the minimum value and means for applying the minimum value to said adding means when the preceding play additive value is below the minimum value or above a predetermined maximum value and means applying the preceding play additive value when it is not;

means for adding said first additive value signal to one of said stored output signals and providing a signal corresponding to the summed value;

counter means for receiving said summed value signal and being preset to the summed value thereof, said counter means counting to a predetermined count when driven by said clock signal and providing a counter output signal when said counter means reaches said predetermined count; and

means for stopping said movement of said set of symbols in response to receiving said counter output signal.

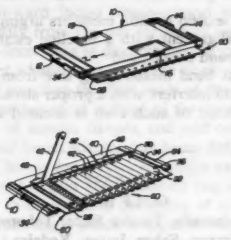
4,353,555
DUPLICATE BRIDGE SCORING SYSTEM

Frederick H. Flam, 2160 Century Park East, Los Angeles, Calif. 90067

Filed Jul. 28, 1980, Ser. No. 172,569

Int. Cl.³ A63B *71/00*; A63F *9/00, 1/10*

U.S. Cl. 273—148 R **23 Claims**



1. In match point duplicate scoring apparatus cooperable with a deck of playing cards and with a data card divided by substantially equally spaced transverse parallel lines into a series of individual spaces for writing information corresponding to results of card play:

(a) a duplicate bridge board having four pockets for four sets of thirteen cards corresponding to individual bridge hands;

(b) said duplicate board also having a holder for said data cards;

(c) a series of elongated concealer strips each of the same width corresponding to that of said data card spaces;

(d) each of said concealer strips extending parallel to each other to extend transversely of said data card;

(e) each of said concealer strips being individually manually movable to conceal and to reveal said data card spaces; and

(f) means for retaining said concealer strips with said holder during movement of said concealer strips from concealing position to revealing position and from revealing position to concealing position during the course of use in a play session, whereby said concealer strips are prevented from detaching from the holder.

4,353,556
GOLF CLUB SWING TRAINING AID

James M. Self, and Charles Schaubel, both of Metairie, La., assignors to Golf Bands Products/Louisianna Partnership, New Orleans, La.

Filed Jan. 27, 1981, Ser. No. 228,734

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 A **15 Claims**

2. A golf training aid comprising:

alignment band means;

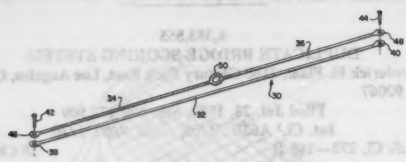
means for attaching one end of said alignment band means to one of a pair of spaced apart mounting points and the other end of said alignment band means to the other of said mounting points to establish a straight baseline;

a first tension member;

means for securing one end of said first tension member to the head of a golf club;

means for attaching the other end of said first tension member to one of said spaced mounting points;

a second tension member;
means for securing one end of said second tension member to said golf club head;
means for attaching the other end of said second tension member to the other of said spaced mounting points;



said first and second tension members urging said golf club head into alignment with a baseline established by said alignment band means; and
said alignment band means being free from protuberances which would interfere with a proper stroke of a golf club when the head of such club is secured to said tension members.

4,353,557

GOLF BALL

Ryota Kajita, Matsudo; Tasuku Saito, Tokorozawa; Tsutomu Matsunaga, Iruma; Sakae Inoue, Kodaira, and Masayuki Ohtake, Yokohama, all of Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,748
Claims priority, application Japan, Mar. 16, 1979, 54-31326
Int. Cl.³ A63B *37/12;* **C08K** *3/04;* **C08L** *7/00, 9/00*
U.S. Cl. 273—227 **1 Claim**

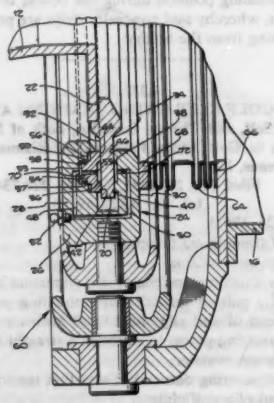
1. In a rubber thread wound golf ball composed of a core, a rubber thread layer and a cover layer, the improvement comprising; wherein the rubber thread in the rubber thread layer of a rubber composition consists essentially of 100 parts by weight of at least one rubber component selected from the group consisting of natural rubber cis-1,4-polyisoprene and mixtures thereof, and 2–20 parts by weight of carbon black.

4,353,558

HYDROSTATIC RETORT SEAL

Donald Firth, Los Angeles, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Nov. 4, 1980, Ser. No. 203,972
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—30 **8 Claims**



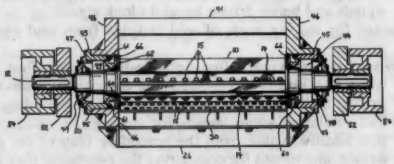
1. Hydrostatic retort seal means adapted to seal the rotating portion of a rotating retort to the stationary retort portions comprising:
first seal surface means associated with said rotating vessel portion for providing an annular sealable surface, said first seal surface means including a radially extending seal disc having first and second side surfaces with the first side surface facing towards the rotating vessel portion and the second side surface facing away from the rotating vessel portion;
second seal surface means associated with said stationary retort portion for providing an annular sealable surface located in sealable relation with said first real surface means, said second seal surface means including an annular seal jacket having first and second integral arm portions extending around said sealing disc adjacent said disc side surfaces, said first arm portion being adjacent said first side surface and said second arm portion being adjacent said second side surface;
interface seal means for sealing the first seal surface means to said second seal surface means by providing a liquid interface seal layer between the first and second seal surface means to prevent escape of gases and liquids from said rotating retort, said interface seal means including annular sealing channels in said arm portions adjacent said disc side surfaces to provide annular sealing chambers for containing said interface seal layer, said sealing channels being open adjacent said side discs whereby said interface seal layer contacts said side surfaces and seals the interface between the side surfaces and arm portions, and wherein at least one of said sealing channels is provided with an annular sealing piston which is slidably mounted within said arm portion whereby the distance between the first and second sealing channels may be varied; and
gimbal means for mounting said second seal surface to provide for movement of said second seal surface to follow nutation of said first seal surface and during rotation of the rotary report.

4,353,559

LABYRINTH SEAL

Mieczyslaw Budzich, Lexington, and Forest G. Fitz, Jr., West Columbia, both of S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Jul. 23, 1980, Ser. No. 171,632
Int. Cl.³ F16J *15/44*
U.S. Cl. 277—53 **6 Claims**



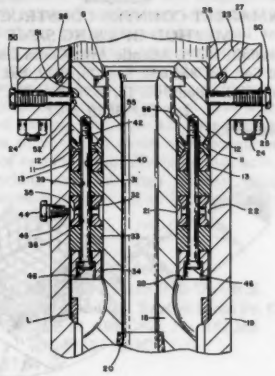
1. A labyrinth seal for a granulator of the type having a rotor that has a blade support from which a shaft extends through a bearing housing, and with the labryinth seal comprising an annular first section having a tortuous path defining face; an annular second section having a rim and a tortuous radial path defining face located closely adjacent said first section tortuous path defining face; and an annular third section having a plurality of arcuate segments removably mounted to said second section in a position overlaying said second section rim.

4,353,560

METAL SEAL ASSEMBLY WITH DEFORMABLE SEALING RING

Henry O. Tohill, Bossier City, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 7, 1981, Ser. No. 328,053
Int. Cl.³ F16J 15/08, 15/10
U.S. Cl. 277—236 6 Claims



1. A metallic sealing ring assembly for sealing an annulus between concentric tubular members, said metallic sealing assembly comprising:

a metallic sealing ring mounted within said annulus in sleeved relationship about the inner concentric tubular member, said metallic annular sealing ring comprising a central annular rib section;

a first pair of upper and lower annular flanges integrally formed with said rib section at the inner periphery thereof;

each said annular flange of said first pair being characterized by a radially inward facing frusto-conical surface which decreases in diameter to the distal end tip of said flange and is convergent with the other radially inward facing frusto-conical surface of said first pair along the central transverse axial plane through said metallic sealing ring to define therewith the inner peripheral surface of said metallic sealing ring;

and a radially outward facing frusto-conical surface extending upwardly from said rib section and decreasing in diameter to the distal end tip of each said flange;

a second pair of upper and lower annular flanges integrally formed with said rib section at the outer periphery thereof, each said annular flange of said second pair being characterized by a radially outward facing frusto-conical surface which increases in diameter to the distal end tip thereof and is convergent with the other radially outward facing frusto-conical surface of said second pair along the central transverse axial plane through said metallic sealing ring to define therewith the outer peripheral surface of said metallic sealing ring, and each having a radially inward facing frusto-conical surface extending from said rib section and increasing in diameter to the distal end of each said outer flange;

an upper adapter ring having inner and outer diameter substantially corresponding to the inner and outer diameter of said metallic sealing ring and disposed atop said metallic sealing ring in concentric relation therewith, said upper adapter ring adjacent its bottom surface having inner and outer bevelled surfaces, said inner bevelled surface being defined by a radially inward facing frusto-conical surface extending upwardly from the bottom surface of said upper adapter ring and decreasing in diameter to the inner periphery of said upper adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially outward facing frusto-conical surface of the upper flange of said first pair of annular flanges and said outer bevelled surface being defined by a radially outward facing frusto-conical surface extending upwardly from the bottom surface of said upper adapter ring and increasing in diameter to the external periphery of said upper adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially inward facing frusto-conical surface of the upper flange of said second pair of annular flanges;

a lower adapter ring having inner and outer diameters substantially corresponding to the inner and outer diameters of said metallic sealing ring and disposed below said metallic sealing ring in concentric contacting relation therewith, said lower adapter ring adjacent its top surface having inner and outer bevelled surfaces, said inner bevelled surface of said lower adapter ring being defined by a radially inward facing frusto-conical surface extending downwardly from the top surface of said lower adapter ring and decreasing in diameter to the inner periphery of said lower adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially outward facing frusto-conical surface of the lower flange of said first pair of annular flanges, and said outer bevelled surface of said lower adapter ring being defined by a radially outward facing frusto-conical surface extending from the top surfaces of said lower adapter ring and increasing in diameter to the external periphery of said lower adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially inward facing frusto-conical surface of the lower flange of said second pair of annular flanges; and

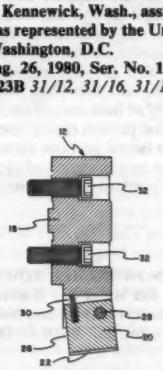
means for effecting an axial compression of said metallic sealing ring assembly whereby said inner upper and lower pair of annular flanges are deflected radially inward and said outer upper and lower pair of annular flanges are deflected radially outward to engage and establish metal-to-metal seals with the surfaces of the concentric tubular members defining said annulus.

4,353,561

SELF-ALIGNING LATHE CHUCK JAWS

William R. Peterson, Kennewick, Wash., assignor to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,519
Int. Cl.³ B23B 31/12, 31/16, 31/18, 31/19
U.S. Cl. 279—123 1 Claim



1. A jaw, for use in a lathe chuck having a longitudinal axis of the type wherein the jaws are radially adjustable across the chuck's face to grip a workpiece, comprising:

(a) A jaw base radially adjustable across said face;

(b) a jaw shoe having a generally workpiece-conforming surface engageable with, and generally orientationally matchable with, said workpiece;

(c) means for rotatably attaching said shoe to said base comprising a pivot pin generally perpendicular to the longitudinal axis of said lathe chuck and generally perpendicular to the direction of adjustment of said base and disposed

further from said face than is the centroid of said shoe, wherein said base has a yoke and said shoe has a matching tongue, with said tongue and said yoke also having transverse holes which, when said tongue is disposed in said yoke, form a single bore which contains said pivot pin; and

(d) further comprising biasing means for resiliently tilting said surface comprising a compression spring, with said shoe having a superficies, generally opposite said surface, containing a cavity generally perpendicular to said surface and disposed closer to said face than is said pivot pin, and with said spring disposed in said cavity and contacting said base to resiliently tilt said surface so that, when said jaw is adjusted to grip said workpiece, the portion of said surface closest to said face engages said workpiece first and said surface draws said workpiece into said lathe chuck.

4,353,562

ICE SKATE

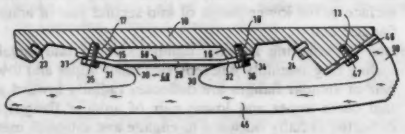
Alfred Tiefenthal, Grenzstrasse 47j, 4220 Dinslaken, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,321

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 8018079[U]

Int. Cl.³ A63C *17/18*

U.S. Cl. 280—7.13 **8 Claims**



1. An ice skate, comprising a shoe support adapted to be attached to a shoe of a user; an elongated blade having a front end, said blade being formed with only two upward projections a first projection positioned at said front end and inclined rearwardly towards said support and a second projection extending towards said support and located substantially in the middle of the blade; and connection means for connecting the blade to the shoe support, including a first metallic plate rigidly connected to said first projection and inclined towards the middle of the blade, said first plate being connected to said support by means of at least one screw, and a second metallic plate having a central portion rigidly connected to said second projection and two lateral portions outwardly extending from said central portion in a direction of elongation of the blade, each of said lateral portions being connected to said support by at least one screw.

4,353,563

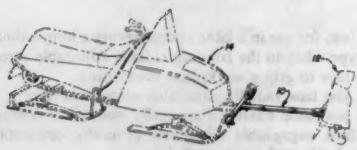
SNOWMOBILE TOWBAR

Thomas R. Foster, 602 Water St., Warren, Ill. 61087

Filed Dec. 10, 1979, Ser. No. 101,893

Int. Cl.³ B62B *17/00*

U.S. Cl. 280—24 **9 Claims**



1. A towbar for towing a snowmobile comprising: an elongated tongue, a hitch connected to one end of said tongue for releasably securing the tongue to a vehicle, an elongated crossbar connected to the other end of the tongue for engagement with skis of a towed snowmobile, and an elongated ear connected to each end of the crossbar to hold the crossbar in engagement with the skis, each of said ears having one end fixed to the crossbar and the other end spaced away from the crossbar and extending toward the other end, each of said ears being no greater distance from the hitch than the crossbar.

4,353,564

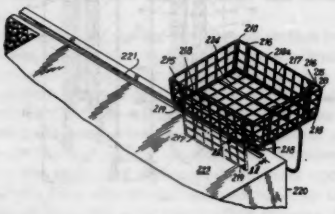
SUPERMARKET COUNTER CONSTRUCTION AND METHOD OF USING SAME

Stanley Joseloff, 185 S. Atlantic Ave., Cocoa Beach, Fla. 32931

Division of Ser. No. 836,031, Sep. 23, 1977, Pat. No. 4,114,727. This application Jun. 15, 1978, Ser. No. 918,611

Int. Cl.³ B62B *3/02*

U.S. Cl. 280—79.3 **4 Claims**



1. In a shopping cart having a wheeled frame and a basket element supported thereby, said basket element including front, rear and first and second side walls, the improvement comprising: at least one of said side walls having a slidably mounted portion thereof, selectively positionable between opened and closed positions, said mounted portion being movable in a plane substantially parallel to that of said side wall; resilient means interconnecting said mounted portion and the remainder of said side wall, urging said mounted portion in an upward direction to said closed position; and latching means maintaining said mounted portion in opened position against said resilient means.

4,353,565

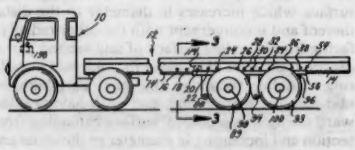
ATTACHMENT FOR AUTOMOTIVE TRAILERS

Gary L. Smith, Granite City; Delbert E. Smith, Cahokia; Floyd D. Catterson, Granite City, all of Ill., and Ronald G. Dooley, P.O. Box 38, Madison, Ill. 62060

Filed Dec. 18, 1980, Ser. No. 217,855

Int. Cl.³ B60G *5/06*; B62D *27/04*

U.S. Cl. 280—80 B **16 Claims**



1. A power-actuated locking and unlocking system for two relatively-movable objects which can be selectively locked together for conjoint movement or which can be unlocked for movement relative to each other, said objects being an automotive trailer and a wheel-supporting slider for said automotive trailer which is adjacent the rear of said automotive trailer, said system comprising interacting relatively-movable surfaces on said objects which can permit relative forward or rearward movement of said objects, a power-actuated locking and unlocking member that is mounted on and movable with one of said objects, a plurality of longitudinally-spaced surfaces on the other of said objects that can be selectively engaged by said

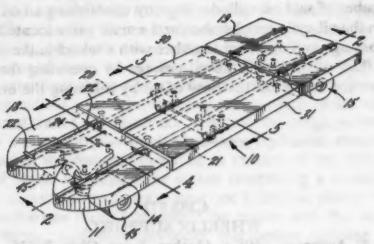
power-actuated locking and unlocking member, said power-actuated locking and unlocking member being selectively responsive to the application of power to move into locking engagement with various of said longitudinally-spaced surfaces on said other of said objects to lock said objects together in various longitudinally-spaced positions, said power-actuated locking and unlocking member being selectively responsive to the application of power to move to a position wherein it is out of locking engagement with all of said longitudinally-spaced surfaces on said other of said objects to free said objects for relative forward or rearward movement, and said power-actuated locking and unlocking member and any one of said longitudinally-spaced surfaces being adapted to prevent relative forward or rearward movement of said objects and hence to insure conjoint movement of said objects whenever said power-actuated locking and unlocking member responds to the application of power to move into locking engagement with said one of said longitudinally-spaced surfaces, said power-actuated locking and unlocking member being separate from, and being independent of, all braking systems for said automotive trailer.

4,353,566

ROLLER SKI TRAINING DEVICE

William Mohlenbrock, Box 1711, Rancho Santa Fe, Calif. 92067

Filed Jan. 11, 1980, Ser. No. 111,366
Int. Cl.³ A63C *17/26*
U.S. Cl. 280—87.04 A **13 Claims**



1. A roller ski training device comprising support means, a pair of parallel foot plates upon which a user may stand pivotally carried in side by side relation by said support means, front and rear roller means for carrying said support means for rolling movement, and means for coupling said roller means to said support means and for causing the device to turn in the direction of one side in response to shifting of weight by the user to the foot plate of the other side.

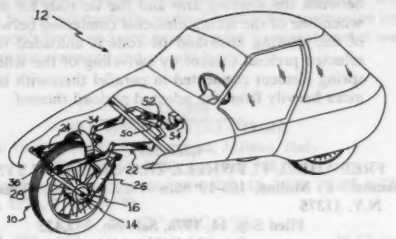
4,353,567

STEERING AND SUSPENSION SYSTEM FOR THE FRONT WHEEL OF A THREE-WHEELED VEHICLE

Ross A. Weldy, 61497 Rte. #1, C.R. 3 South, Elkhart, Ind. 46514

Filed Nov. 24, 1980, Ser. No. 209,523
Int. Cl.³ B62D *1/02*
U.S. Cl. 280—92 **7 Claims**

1. A steering and support device in combination with a wheel of a vehicle in which said wheel has a hub including a central axle, said vehicle including a frame, said steering and support device comprising: a pair of suspension frames carried by said axle, the first of said suspension frames spaced from and on an opposite side of said wheel from the second suspension frame, a lateral cross brace rigidly connected at one end to said first suspension frame and at its other end to said second suspension frame, a first steering arm pivotally connected at one end to said first suspension frame, and a second steering arm pivotally connected at one end to said second suspension frame, a first pin attached to said first steering arm and pivotally journalled in bearing means on said vehicle frame at a location spaced from said first steering arm one end, a second pin attached to said second steering arm spaced from said second steering arm one end and journalled in a second bearing means on said vehicle frame spaced from said first mentioned bearing means on said vehicle frame, linkage means for associating said first and second steering arms at their opposite ends to a steering control apparatus wherein said linkage means causes the steering arms to rotate about said first and second pins upon actuation of said steering control apparatus to turn said wheel in a chosen direction.

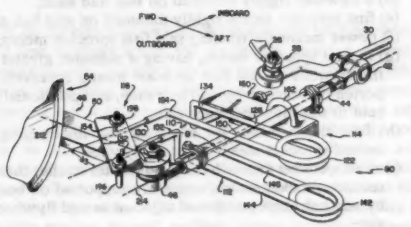


4,353,568

PROGRAMMABLE STEERING CONTROL APPARATUS FOR MOTOR VEHICLES

William A. Boyce, Huntington Beach, Calif., assignor to Macaster Controls, Inc., Huntington Beach, Calif.

Filed Jun. 6, 1980, Ser. No. 157,194
Int. Cl.³ B62D *15/02*
U.S. Cl. 280—94 **20 Claims**



7. Programmable steering control apparatus for motor vehicles having left and right steerable wheels, left and right steering arms connected, respectively, to the left and right steerable wheels, left and right tie rods pivotally connected to ends of the first and second steering arms and wheel steering linkages connected to the tie rods, said apparatus comprising:

(a) a pair of first spring elements, each of said first spring elements having tangentially loaded, helical spring coils with attachment ends connected thereto, said first spring element attachment ends being configured to cause opening of said coils in response to said ends being pulled apart and closing of said coils in response to said ends being pushed together;

(b) a pair of second spring elements, such of said spring elements having tangentially loaded, helical spring coils with attachment ends connected thereto, said second spring element attachment ends being configured to cause closing of said coils in response to said ends being pulled apart and opening of the coils in response to said ends being pushed together;

(c) means for connecting one each of the first and second spring elemens, in mutual parallel relationship, between the left steering arm and left tie rod and the other one each of the first and second spring elements, in mutual parallel

relationship, between the right steering arm and right tie rod, to cause, when the wheels are swiveled from one turn direction to the other turn directional change in loading of the spring elements between push and pull loading; and

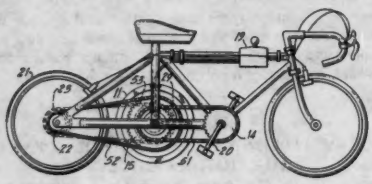
(d) means for selectively preloading said first and second spring elements after said spring elements are connected between the steering arm and the tie rods for enabling, when one of the spring elements connected between one of the steering arms and tie rods is unloaded from the selected preload thereof by swiveling of the wheels, the spring element connected in parallel therewith is loaded more heavily from the selected preload thereof.

4,353,569

FREEWHEEL FLYWHEEL TRANSMISSION SYSTEM

Antonio F. Molina, 105-10 66th Ave., Apt. 3C, Forest Hills, N.Y. 11375

Filed Sep. 14, 1978, Ser. No. 942,423
Int. Cl.³ B62M *1/10*
U.S. Cl. 280—217 **3 Claims**



1. An inertia vehicle, comprising:

(a) a frame;

(b) an axle supported by said frame;

(c) a hub shell rotatively supported by said axle;

(d) a flywheel rigidly mounted on said hub shell;

(e) first sprocket means rigidly mounted on said hub shell;

(f) power means for rotating said first sprocket means;

(g) second sprocket means, having a diameter greater than the diameter of said first sprocket means, rotatively supported on bearings by said hub shell, and positioned adjacent to said flywheel right side,

(h) first clutch means for engaging and disengaging said second sprocket means and said flywheel;

(i) third sprocket means, having a diameter smaller than said second sprocket means, rotatively supported on bearings by said hub shell; positioned adjacent to said flywheel left side;

(j) second clutch means for engaging and disengaging said third sprocket means and said flywheel;

(k) a driven wheel rotatively supported by said frame, including fourth and fifth sprocket means mounted at right and left sides on the axle of said driven wheel, and further having first and second transmission means for coupling the rotation of said second and third sprocket means, respectively, to said fourth and fifth sprocket means, whereby activation and de-activation of said first and second clutch means enables the transmission of rotational movement from said flywheel to said fourth and fifth sprocket means.

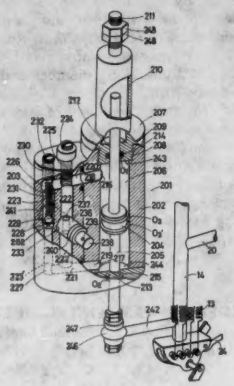
4,353,570

OIL BRAKE DEVICE FOR USE IN BICYCLES

Kuniyoshi Kanazawa, 2-21-5 Nakamiya, Asahi-ku Osaka-shi 535, Japan

Filed Apr. 18, 1980, Ser. No. 141,622
Claims priority, application Japan, Apr. 21, 1979, 54-49234
Int. Cl.³ B62J *1/06*
U.S. Cl. 280—283 **5 Claims**

1. An oil brake device for use in bicycles wherein a saddle support is suspended independent of a main body frame, said saddle support having a saddle and a rear wheel driving gear means secured respectively to the upper and the lower ends of said saddle support, said oil brake device comprising an oil cylinder having upper and lower ends with said upper end of said cylinder being adjacent said upper end of said saddle support, a piston rod provided in said cylinder moving together with said saddle support, an oil passage opened at and



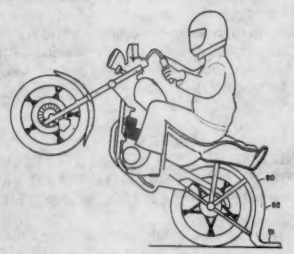
communicating with the upper and lower ends of the cylinder chamber of said oil cylinder thereby establishing an oil circuit with the oil cylinder chamber, and a main valve located in said oil passage and operated together with a wheel brake to block the flow of oil inside the oil passage by operating the wheel brake and to permit the flow of oil by releasing the brake.

4,353,571

WHEELIE SUPPORT

Ray C. Anderson, 7605 S. Quebec, Tulsa, Okla. 74136

Filed Sep. 26, 1980, Ser. No. 191,124
Int. Cl.³ B62H *1/12*; B62J *27/00*
U.S. Cl. 280—295 **3 Claims**



1. Apparatus for use with a two-wheeled conveyance having a frame, such as a motorcycle or bicycle, having a forward and a rearward wheel, providing means when the front wheel is raised off the support surface to add stability to the vehicle, comprising:

a fender covering the upper portion of the rear wheel of the conveyance;

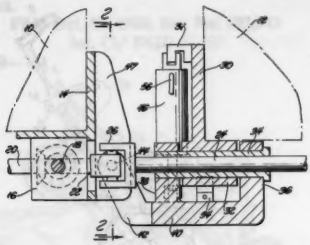
means affixed to and extending rearwardly of the conveyance rear wheel fender which is normally above and out of contact with the support surface, and which engages the support surface when the conveyance front wheel is raised off the support surface a preselected amount.

4,353,572

ARTICULATION JOINT ROLL STABILIZER

William T. McCain, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1980, Ser. No. 155,341
Int. Cl.³ B60D 7/00
U.S. Cl. 280—492 2 Claims



1. An articulated wheeled vehicle comprising a tractor; a trailer; a first hitch fitting (14) carried by the tractor at its rear end; circular bearing means (32) carried by the trailer front end, said bearing means extending along the trailer longitudinal centerline to define a trailer roll plane axis; a second hitch fitting (40) swingable on said bearing means in the trailer roll plane; said second hitch fitting including two laterally spaced arms (42) extending forwardly from the trailer toward the first hitch fitting; hinge pin means (44) connecting the second hitch fitting spaced arms to the first hitch fitting; said hinge pin means extending along a horizontal axis transverse to the tractor longitudinal axis in intersecting relationship to the aforementioned trailer roll plane axis, whereby the hinge pin means defines a tractor-trailer pitch plane axis; hydraulic means for introducing mechanical resistance to motion of the trailer in the roll plane; said hydraulic means comprising a closed hydraulic circuit that includes at least one hydraulic piston-cylinder mechanism trained between the trailer and the second hitch fitting, said piston-cylinder mechanism defining two piston-cylinder chambers of inversely-varying volume; a fluid line (52, 56) interconnecting the two chambers; and

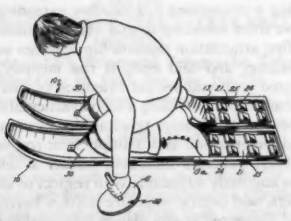
a solenoid valve (54) in said fluid line; said valve having a first substantially closed condition offering substantial resistance to liquid flow through the fluid line, and a second open condition offering minimum resistance to liquid flow through the fluid line.

4,353,573

KNEE ENGAGING SKI

Donald F. Morgan, 133 E. Central Ave., Zeeland, Mich. 49464

Filed Aug. 18, 1980, Ser. No. 178,799
Int. Cl.³ A63C 5/00
U.S. Cl. 280—606 8 Claims



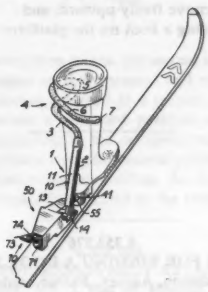
1. A ski-like board member for slidably supporting a person in kneeling position for movement over a low friction surface, said device having an elongated body formed as an integral single unitary piece with an upwardly curved forward end, an upstanding, rearwardly inclined, transverse panel defining a rearwardly facing pocket of a size and shape to receive a person's knee, said pocket being forwardly bowed and adjacent to and rearward of said curved forward end; an upstanding stop integrally formed with said body and having a forwardly facing substantially vertical wall for engaging the toe of a person's boot, said stop being spaced from said pocket and adjacent the rearward end of said body.

4,353,574

SKI BINDING STRUCTURE

Antonio Faulin, Via G. da Procida 4, Milano, Italy

Filed Feb. 4, 1980, Ser. No. 118,377
Claims priority, application Italy, Feb. 16, 1979, 20285 A/79; Aug. 8, 1979, 24981 A/79
Int. Cl.³ A63C 9/08
U.S. Cl. 280—613 10 Claims



1. A ski binding structure comprising a front latching means and a rear latching means for removably securing a skier's footwear to a ski, said front latching means comprising a front latching body fixed to said ski and said rear latching means comprising a rear latching body connected to said ski, a substantially rigid rod-like element having one end pivotally connected to said rear latching body for rotation about an axis substantially parallel to an upper ski surface and substantially perpendicular to a ski longitudinal extension, said rod-like element having another end shaped for engaging a skier's leg at a middle portion thereof, resilient means arranged between said rod-like element and said rear latching body for maintaining said rod-like element in contact with the skier's leg, wherein said front latching means further comprises a recess in a sole of said skier's footwear in a front sole portion and a peg in said recess, said front latching body and said peg being shaped for removable mutual engagement, and wherein said rear latching means further comprises a rear groove defined at a rear portion of said skier's footwear and a plunger housed in said rear latching body and extending towards said front latching means and resiliently and detachably engaging said rear groove, said rear groove and said plunger being arranged such as to maintain said skier's footwear slightly raised from the ski under normal rest conditions.

4,353,575

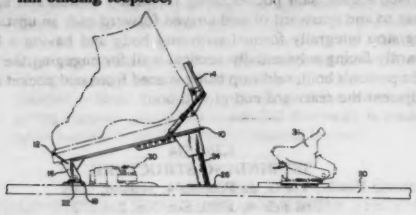
SKI BINDING

Ralph E. Brice, 3012 124th Ave. Northeast, Bellevue, Wash. 98005

Filed Oct. 9, 1980, Ser. No. 195,392
Int. Cl.³ A63C 9/00
U.S. Cl. 280—614 5 Claims

1. A detachable alpine ski binding suitable for use on a downhill ski of the type having a downhill binding with releasable toe and heelpieces, comprising:

bridge means having a forward end detachably mounted on the ski forward of the downhill binding toepiece for supporting the forward portion of a ski boot above the downhill binding toepiece,



means engageable with the ski for supporting the rearward portion of the ski boot between the downhill binding toe and heelpieces while allowing the rearward portion of the ski boot to move freely upward, and

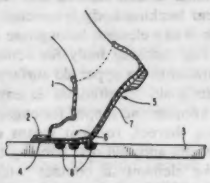
means for holding a boot on the platform.

4,353,576

SYSTEM FOR BINDING A BOOT TO A SKI

Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon & Fils, Annecy, France

Filed Jan. 18, 1980, Ser. No. 113,164
Claims priority, application France, Jan. 26, 1979, 79 02002
Int. Cl.[3] A63C 9/10
U.S. Cl. 280—615 14 Claims



1. A system for binding a boot to a ski intended for cross-country skiing, comprising

(a) means for connecting said boot and said ski located at the front of said boot and allowing the heel of said boot to lift with respect to the top surface of said ski; and

(b) means for laterally retaining said boot on said ski during the full course of its descent from a position in which its metatarsal and heel portions are raised from the surface of said ski, to a position in which said portions rest on said ski, said means being located between the sole of said boot and the top surface of said ski under the metatarsal zone of the foot of the user of said ski, and comprising two members, one of said members comprising at least one rigid piece provided with at least one projection, the other of said members comprising a piece made of soft, elastic material for said one of said members;

(c) one of the said members being fixedly arranged on the part of said sole corresponding to the plantar support zone of the metatarsal zone, and the other of said members being affixed to said ski in the zone where said first member abuts.

4,353,577

ADJUSTABLE-BACKREST COLLAPSIBLE STROLLER

Pietro Giordani, Via Rupe, 19 - Sasso Marconi (Province of Bologna), Italy

Filed Nov. 26, 1979, Ser. No. 97,583
Claims priority, application Spain, May 8, 1979, 480.368
Int. Cl.[3] B62B 7/02
U.S. Cl. 280—642 3 Claims

1. In a widthwise and lengthwise collapsible baby stroller having a longitudinal plane of symmetry, an adjustable backrest structure, a seat structure defining a seating plane and four legs supporting the backrest and seat structure, and including a pair of approachable wheeled front legs and a pair of approachable wheeled rear legs, the improvement comprising

said seat structure including a left side portion and a right side portion in symmetrical relationship to each other with respect to said longitudinal plane of symmetry, each of said side portions comprising a multiply bent rod member having a first extension forming integral therewith one of said rear legs, a second extension integral therewith beginning at a first bent of said rod member and directed transverse to said first extension and parallel to said seating plane, a third extension extending transverse to said second extension in a direction opposite to said rear leg forming first extension and departing from a second bent of said rod member at the front side of said second extension remote from said first bent and a fourth extension extending from a third bent of said rod member remote from said second bent and extending above and in the direction of said seat forming second extension from the front towards the rear of the stroller, said third and fourth extension forming one of symmetrically arranged armrests of the stroller,

said backrest structure including symmetrically arranged, on each lateral sides thereof an upright rod member articulated at a lower end thereof with said multiply bent rod member at said first bent thereof and having at the opposite end thereof a handle member for the stroller, a first articulation point supported by said upright rod member and located below and adjacent said handle member,

said pair of approachable wheeled front legs including for each front leg a connecting rod member extending from the respective front wheel up to said first articulation point defining a first articulation relationship between said connecting rod member and said upright rod member, lever means connected with said second extension of said multiply bent rod member and providing a second articulation point defining a second articulation relationship between said connecting rod member and said multiply bent rod member,

said backrest structure including further a central structure portion angularly adjustable with respect to said upright rod members, said central structure portion having a lower end thereof connected in articulation relationship with said multiply bent rod member at said first bent thereof, said central structure portion having an upper end thereof including guide means extending in the longitudinal direction of the stroller, said upright rod members having slider means rigid

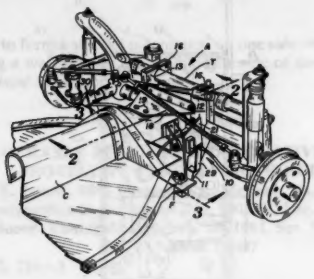
therewith and in slidable engagement with said guide means to allow adjustable displacement of said upper end of said central structure portion along said guide means thereby to cause angular displacement of said central structure portion about said articulation relationship thereof.

4,353,578

AUTOMOBILE FRAME CONVERSION UNIT

Gerald W. Knapp, Cokato, Minn., assignor to Elite Enterprises Inc., Minn.

Filed Oct. 17, 1980, Ser. No. 197,913
Int. Cl.³ B62D *21/00*
U.S. Cl. 280—781 7 Claims



1. An automobile frame conversion unit for the replacement of a normally provided first front axle assembly of the automobile with a second selected front axle assembly, the automobile frame including a forwardly extending tunnel chassis and the second selected front axle assembly including a pair of vertically spaced torsion bar members, said conversion unit including:

a. a rearwardly directed tunnel clamping assembly including a pair of vertically spaced plate members received on vertically opposite sides of the tunnel portion of the frame with means for clamping said tunnel therebetween;

b. a forwardly directed clamping assembly including a pair of first horizontally spaced, vertically upstanding elements secured to the lower of said vertically spaced plate members and extending upwardly therefrom, each of said first upstanding elements includes recessed portions which receive said torsion bar members;

c. means for securing the upper portions of said upstanding elements to said upper plate of said clamping assembly;

d. a pair of second horizontally spaced, vertically upstanding elements, each of said second upstanding elements includes recessed portions which receive said torsion bar members; and,

e. a pair of clamp members which clamp said second upstanding elements to said first upstanding elements with said torsion bars received in said recessed portions.

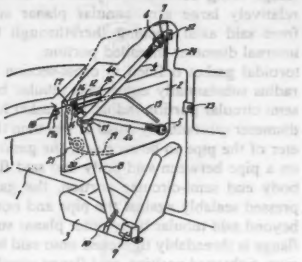
4,353,579

AUTOMOBILE PASSIVE TYPE SAFETY SEAT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 195,726
Claims priority, application Japan, Oct. 18, 1979, 54-143328[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 4 Claims

1. In a passive occupant restraint belt system for a vehicle which includes a restraining belt, apparatus for moving the belt from an occupant-restraining position to an occupant-releasing position in response to opening of a door of the vehicle comprising belt transfer means engaging the belt for moving the belt along a guide means from the restraining position to the releasing position, and output transmission means coupled to the belt transfer means for transmitting and amplifying opening motions of the door to the transfer means, and a motion amplifier mounted in the door, the improvement wherein the motion amplifier comprises (a) an output gear wheel engaging the output transmission means of the belt and (b) a second input gear wheel having a smaller diameter and mounted concentric to and rotatable with the output gear wheel and engaging a



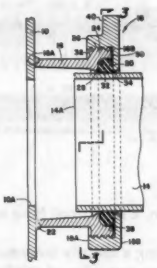
second input transmission means, the second input transmission means being coupled to the rearward end of a link rod by a second transfer means received in a second guide means and transferable between a rearward position along the second guide rail corresponding to the occupant-restraining position and a forward position along the second guide rail corresponding to the occupant-releasing position, the forward end of the link rod being releasably attached to the body of the vehicle.

4,353,580

APPARATUS FOR REMOVABLY ATTACHING A PIPE

Theodore B. Houck, Rte. 1, Box 46, Haskell, Okla. 74436

Continuation of Ser. No. 165,775, Jul. 3, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,331
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—39 3 Claims



1. Apparatus for removably attaching a pipe comprising:

a tubular body of short axial length adapted at its inner end for attachment to a vessel, pipe or other object with which communication is required, the body having, at the outer end an integral enlarged external diameter portion having external threads thereon, the body having adjacent and spaced from its outer end an integral reduced internal diameter circumferential portion, the internal diameter of which is slightly greater than the external diameter of the pipe to be attached, the outer end surface of the tubular body being defined in cross-section in a plane of the tubular axis by an outer planar portion perpendicular the tubular axis providing a relatively large area planar annular surface and by an inward semi-circular portion of selected radius connecting the reduced internal diameter portion and the planar annular end surface;

a circular flange having an inner end and outer end and having an axial opening therethrough of internal diameter slightly greater than the external diameter of the pipe to be attached and substantially equal to the internal diameter of said body reduced internal diameter portion, and having an enlarged internal diameter portion communicating with said inner end and having internal threads dimensioned to engage said body external threads, and the flange being defined in a plane of the tubular axis by a relatively large area annular planar surface extending from said axial opening therethrough to said enlarged internal diameter threaded portion;

a toroidal gasket defined in cross-section by a circle of a radius substantially equal said tubular body end surface semi-circular portion radius, the gasket having an internal diameter substantially equal or less than the external diameter of the pipe to be received, the gasket being received on a pipe between said body and said flange within said body end semi-circular portion, the gasket being compressed sealably against the pipe and normally extending beyond said tubular body outer planar surface and as said flange is threadably tightened onto said body to the maximum tightened position, said flange annular planar surface engages and compresses the gasket and engages said body large area planar annular surface; and

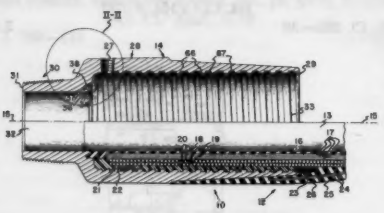
said flange having an external circumferential surface having a plurality of spaced apart increased external diameter lobes whereby said flange may be threaded onto or off of said body by hammering on the lobes.

4,353,581

HOSE COUPLING

George W. Eisenzimmer, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 28, 1980, Ser. No. 210,944
Int. Cl.[3] F16L *39/02*
U.S. Cl. 285—149 10 Claims



1. In combination, a reinforced hose and coupling assembly comprising:

(a) a hose including a radially innermost tube of elastomeric material, at least two plies of reinforcing elements, and a cover layer of polymeric material;

(b) a rigid coupling having a nipple portion joined to a sleeve portion that extends over the hose, said nipple portion having a coaxial bore therethrough in communication with a counterbore of greater dimension extending coaxially through said sleeve portion, said coupling including a generally radial shoulder that defines the maximum extent of the counterbore, said coupling including an annular recess extending from said shoulder toward the nipple portion, said recess being filled with elastomeric material that is adhered to the surfaces defining the recess and to the radially innermost tube of said hose;

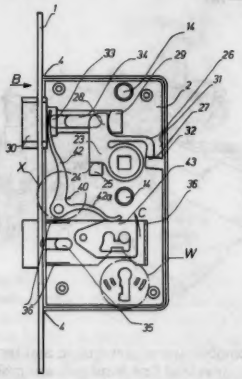
(c) said plies of reinforcing elements extending into the sleeve portion and not beyond said shoulder and being embedded in an anchoring matrix material disposed within the sleeve portion of the coupling that anchors the reinforcing elements to the sleeve portion of the coupling.

4,353,582

DOOR LOCK WITH TWO LOCK CASE PORTIONS DISPOSED IN PARALLEL OPPOSED RELATIONSHIP

Willi Eigemeier, Friedrichshaller Strasse 66/1, Bad Friedrichshall D-7107, Fed. Rep. of Germany

PCT No. PCT/EP79/00001, § 371 Date Mar. 18, 1980, § 102(e) Date Mar. 18, 1980, PCT Pub. No. WO80/00359, PCT Pub. Date Mar. 6, 1980
PCT Filed Jan. 15, 1979, Ser. No. 193,948
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833622
Int. Cl.[3] E05B *65/06;* E05C *1/12*
U.S. Cl. 292—169.15 15 Claims



1. A door lock comprising two lock case parts disposed in parallel opposed relationship and forming a lock case, an injection molded resilient thermoplastic material follower mounted in the lock case and moveable therein between inoperative and operative positions, the follower having a body part which in the follower inoperative position is engaged against a stop bar in the case, said follower further having a lever-like follower leg, said lock further including a spring bolt, a tumbler and a spring member engageable with both said spring bolt and said tumbler, radial rotative movement of the follower to an operative position causing lateral shifting of the spring bolt, characterized in that

the follower leg forks off the follower body part and bears against an abutment structure in the lock case, said follower leg resiliently bending outwardly relative to the body part upon radial rotary movement of the follower from inoperative to operative positions, the spring bolt and tumbler spring member being a structure having free legs which are integral with a base structure, one leg of said spring member engaging the spring bolt and the other the lock tumbler.

4,353,583

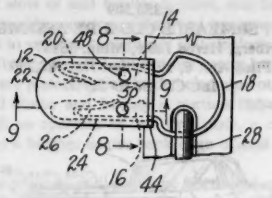
SEAL OF THE PADLOCK TYPE

Sigurd M. Moberg, Etlan, Va., assignor to E. J. Brooks Company, Newark, N.J.

Continuation of Ser. No. 661,829, Feb. 26, 1976, abandoned.
This application Apr. 29, 1980, Ser. No. 144,871
Int. Cl.[3] B65D *33/34*
U.S. Cl. 292—320 3 Claims

1. A padlock-type seal, comprising a housing having a cavity opening to the exterior of the housing and a U-shaped wire shackle, said shackle having a pair of legs, one leg being attached to the seal housing, the other leg being disposed in the cavity and having a reverse bend near the end thereof forming a bight which is flexed together by the cavity walls, and a straight walled obstruction extending through the cavity, said obstruction being smaller in plan area than the cavity and being

positioned to be in the path of the bight if attempts are made to pull the leg out of the cavity, said obstruction being formed by deforming a wall portion of the cavity inwardly through the



cavity to form a surface indentation on one side of the seal and causing a wall portion on the opposite side of the seal to provide visual indication of sealing.

4,353,584

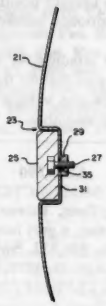
LOCKABLE REMOVABLE DECORATIVE AND PROTECTIVE PANELS FOR VEHICLES

Bruce E. Lovett, 1005 Congress La., McLean, Va. 22101

Continuation-in-part of Ser. No. 100,262, Dec. 4, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 238,073

Int. Cl.³ B60R *19/00*

U.S. Cl. 293—1 **5 Claims**



1. A removable locking panel for a vehicle which comprises:
(a) a frame region on the exterior surface of a vehicle, said frame region having an open end and substantially the same or continuously narrower dimension in a direction away from said open end;
(b) a panel of substantially the same outer contour as the inner contour of said frame region removably positioned in said frame; and
(c) locking means, accessible and operable only from the interior of said vehicle and positioned within said frame region and the interior of said vehicle.

4,353,585

FISHING TOOL TO RETRIEVE CABLES FROM WELLS

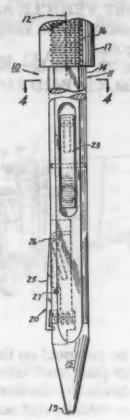
Herman C. Carver, 1105A Sequoia, Bakersfield, Calif. 93308

Filed Oct. 2, 1980, Ser. No. 193,304

Int. Cl.³ E21B *31/12*

U.S. Cl. 294—86.1 **13 Claims**

1. A fishing tool to snag and retrieve cables from wells, comprising: an elongated body having two ends, a substantial length, and a peripheral boundary of lesser lateral dimensions than a well down which the tool is to be sent with a first of its ends pointed down; a snag member comprising a shank and a snag end on said shank, said shank being mounted to said body so that said snag end faces toward the second of said ends and so that said snag end is movable toward and away from said peripheral boundary; bias means biasing said shank to move said snag end toward said peripheral boundary; and detent means interposed between said snag member and said body adapted to releasably hold said snag member with its snag end



away from said boundary in oppostion to the bias force exerted by said bias means, and upon release to permit said bias means to move said snag member to cause said snag end to move toward said boundary in the absence of some other impediment thereto.

4,353,586

VIBRATION DAMPED RAILWAY WHEEL

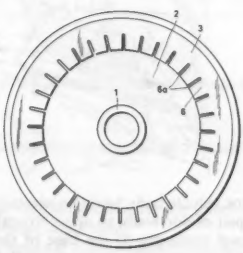
Erwin Raquet, Witten, and Richard Klatt, Bochum, both of Fed. Rep. of Germany, assignors to Fried. Krupp Huttenwerke AG, Bochum, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 903,013

Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720333; Jun. 3, 1977, 2725177; Nov. 12, 1977, 2750743; Mar. 11, 1978, 2810568

Int. Cl.³ B60B *17/00, 19/00;* **F16F** *15/10;* **F16H** *55/14*

U.S. Cl. 295—7 **33 Claims**



1. In a vibration absorber for absorbing the vibrations of a vibration absorbing track wheel having at least one natural frequency, said track wheel having a wheel body with a wheel flange, and at least one resonance absorber on said track wheel, the improvement comprising:

said at least one resonance absorber including at least two adjacent and contiguous tongues each having one end rigidly connected with each other and said track wheel and a layer of damping material intermediate beween each said two adjacent tongues, said two adjacent tongues each being tuned to different natural frequencies of said wheel

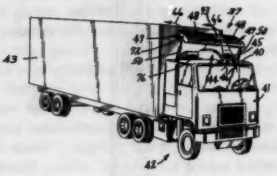
and being coupled over their whole length to said wheel by said intermediate damping material.

4,353,587

TRANSPORT VEHICLE ACCESSORY

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 29, 1980, Ser. No. 192,321
Int. Cl.³ B62D 35/00
U.S. Cl. 296—15 14 Claims



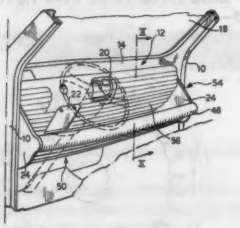
1. An accessory, to be mounted on the cab roof of a traction vehicle having a power plant with inlet and exhaust conduits, to interact with and direct the air stream resulting from forward movement of the vehicle, said accessory including:
means for directing the air stream so as to reduce the effective wind resistance of a load compartment behind the cab;
a ram air inlet positioned in the path of said air stream;
mean for connecting said inlet to said inlet conduit;
at least one exhaust gas outlet positioned to discharge into said air stream; and
means for connecting said outlet to said exhaust conduit.

4,353,588

OBJECT-HOLDING TRAY FOR MOTOR VEHICLES

Giorgetto Giugiaro, and Aldo Mantovani, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Jun. 10, 1980, Ser. No. 158,093
Claims priority, application Italy, Aug. 21, 1979, 53522/79[U]
Int. Cl.³ B60R 5/00
U.S. Cl. 296—37.1 5 Claims



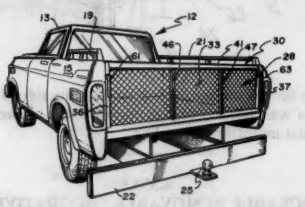
1. In a motor vehicle body having a passenger compartment defined by a pair of side walls, an upper frontal transverse wall portion inclined upwardly to the base of the vehicle windshield, and a lower frontal transverse wall portion inclined downwardly towards the front of said vehicle and cooperating with said upper wall portion to form a substantially L-shaped part of said transverse wall, an object-holding tray which extends across the interior of said vehicle, wherein said tray comprises:
said lower transverse wall portion which defines a wall of said tray;
respective side panels secured to respective said side walls;
a flexible base wall secured at each side to a lower edge of a respective said side panel, and
a crosspiece connected to said side panels and extending in spaced-parallel condition with respect to the said lower transverse wall portion, the said crosspiece supporting one edge of said base wall thereby defining an open receptacle spanning the entire width of the said passenger compartment.

4,353,589

AIR PERMEABLE CLOSURE ASSEMBLY

Bruce L. Hartberg, Heron Lake, Minn. 56137

Filed Apr. 6, 1977, Ser. No. 785,239
Int. Cl.³ B62D 25/00
U.S. Cl. 296—50 16 Claims



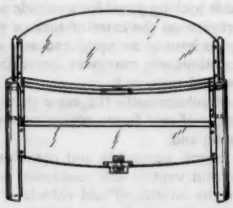
1. A closure assembly for the rear of a vehicle having an open top, two solid sidewalls and a flat bed positioned between the sidewalls, comprising:
a frame;
means for attaching the frame to the rear of the vehicle so that the frame in is upright position extends between the sidewalls and is positioned immediately above the bed of the vehicle; and
a permeable member attached to and covering at least a portion of the frame so that air trapped between the sidewalls and bed when the vehicle is in motion can flow through the closure assembly.

4,353,590

CONTROLLABLE MOTORCYCLE WINDSHIELD

Chang Wei-Chuan, Ping-Tung, Taiwan, assignor to Yang Yin-Lung, Kaohsiung, Taiwan, a part interest

Continuation of Ser. No. 626,552, Nov. 26, 1976, abandoned.
This application Apr. 25, 1977, Ser. No. 790,425
Int. Cl.³ B62J 17/04
U.S. Cl. 296—78.1 1 Claim



1. An adjustable windshield for use on vehicles comprising:
a pair of tubular holders each having a longitudinal slot,
a first stationary transparent plate having opposed side edges fixedly secured to a respective one of said tubular holders adjacent said slots,
a second transparent plate having opposed side edges, means for slidably mounting said second plate on said tubular holders including a tubular rod slidably received within each of said tubular holders,
means for limitir.g the sliding movement of said rods within said holders,
a spring spindle fixedly secured to each tubular holder at the lower end thereof and resilient means positioned between

each of said spring spindles and each of said tubular rods for raising said tubular rods to a raised position,

said side edges of said second transparent plate being secured to a respective one of said tubular rods through said longitudinal slots of said tubular holders, and latching means for releasably securing said second transparent plate with respect to said first transparent plate including a mounting frame fixedly secured at a bottom center back edge of the stationary plate, a spring loaded clamp pivotably mounted on said frame and having a portion thereof extending through an aperture in said first plate, a catch member fixed to a bottom center back edge of said second plate, and

means for pivoting said extending portion of said clamp into and out of engagement with said catch member thereby releasably securing said second transparent plate with respect to said first transparent plate, said resilient means urging said second transparent plate to a raised position when said extending portion is out of engagement with said catch member.

4,353,591

SUN VISOR FOR VEHICLES

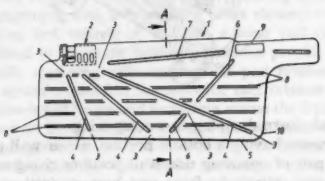
Kurt Cziptschirsch, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 129,991

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910631; Jan. 12, 1980, 3001062

Int. Cl.³ B60J *3/00*

U.S. Cl. 296—97 H **16 Claims**



1. In a sun visor for an automotive vehicle, or the like, a generally rectangularly shaped blow molded body defined by two opposite, spaced apart sides which are held together; the body having an upper and a lower edge and two lateral side edges, the body being surrounded by edge regions defined at the respective edges; the body having corner regions; the body having an open internal space extending from the edges through the edge regions and being substantially continuous across said body;

the body having a mount therefor arranged in at least one of the corner regions thereof at the upper edge thereof;

a plurality of depressed corrugations formed in each of the opposite sides of the body and the corrugations extending across the interior regions of the body between the edge regions thereof;

at least a first one of the corrugations extending in that direction of tensile stress of the body that extends generally from the mount toward the corner region which is diagonally opposite the mount; and

the corrugations having respective ends that terminate in the body, before extending into the edge regions of the body, whereby the corrugations do not extend into the edge regions of the body.

4,353,592

SUN VISOR WITH ILLUMINATED MIRROR

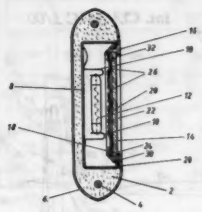
Kurt Cziptschirsch, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,170

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000810

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 B **12 Claims**



1. A sun visor with an illuminated mirror, comprising:

a sun visor body; a recess in a surface of the sun visor body; a housing defined in the recess;

a mirror supported in the housing toward the surface of the sun visor body, leaving space behind the mirror in the housing; a light source in the space in the housing behind the mirror;

a metal plate behind the mirror in the housing and between the light source and the mirror;

support means between the housing, on the one hand, and the mirror and the metal plate, on the other hand;

beads protruding from the metal plate to the rear side of the mirror, thereby defining a space between the metal plate and the mirror for serving as a heat insulating layer.

4,353,593

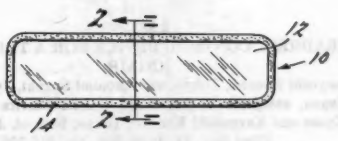
SUN VISOR

Artel R. Henson, P.O. Box 1487, Green Valley, Ariz. 85614

Continuation of Ser. No. 109,126, Dec. 31, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 257,976

Int. Cl.³ B60J *3/00*

U.S. Cl. 296—97 D **6 Claims**



1. A system of fastening means for the interior of a passenger-carrying vehicle, comprising:

first fastening means at multiple selected locations within the vehicle including locations adjacent the peripheral edges of portions of the front and side windows of the vehicle, said first fastening means comprising elongated fastening elements extending substantially the entire length of said edge portions of said vehicle windows, in said interior;

accessory means to be used in said interior; and

second fastening means fixedly attached to said accessory means and capable of being fastened to and separated from said first fastening means;

said first fastening means including both multiple means for operably disposing said accessories and multiple means for storing said accessories at multiple locations throughout the interior of said vehicle;

whereby said accessory means may be utilized or stored at selected positions throughout said interior.

4,353,594

VEHICLE SEATS

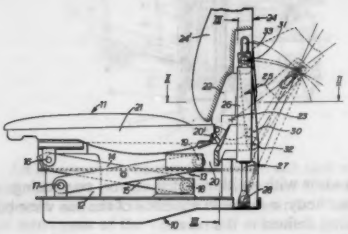
Frederick G. Lowe, Little Billing, England, assignor to UOP Inc., Des Plains, Ill.

Filed Aug. 29, 1979, Ser. No. 70,936

Claims priority, application United Kingdom, Sep. 1, 1978, 35283/78

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—307 **2 Claims**



1. A suspension seat comprising a seat part, which includes a seat support frame, a back rest frame, and means pivotally supporting the back rest frame on the seat support frame adjacent the lower end of the back rest frame for tilting movement about a horizontal axis, said means comprising a base part, a spring suspension supporting the seat part for resilient upward and downward movement on the base part, and a vibration damper of the type comprising a piston and piston rod movable within a cylinder containing damper fluid, the vibration damper being pivotally connected at its upper and lower ends respectively to the seat part and the base part, characterized by a pivotal linkage pivoted at a lower end thereof to the seat part on or adjacent the rearward end of the seat support frame, said pivotal linkage being in the form of a U shaped yoke whose free ends are pivoted to the seat part and whose closed end is pivoted to the upper end of the vibration damper, the vibration damper including the pivotal linkage adjacent the upper end thereof having a sliding connection with the back rest frame, whereby to accommodate tilting of said back rest frame.

4,353,595

HEADREST CONTROL DEVICE FOR A TREATMENT CHAIR

Kazuyoshi Kaneko, Tokyo, and Katsumi Suzuki, Jyoyo, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto and Kazuyoshi Kaneko, Tokyo, both of, Japan

Filed Dec. 11, 1980, Ser. No. 215,395

Claims priority, application Japan, Dec. 27, 1979, 54-180408[U]

Int. Cl.³ A47C *7/38*

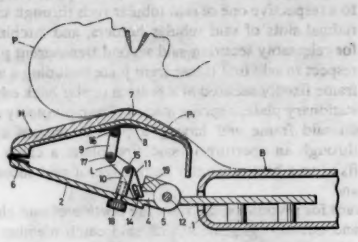
U.S. Cl. 297—408 **4 Claims**

1. A headrest control device for a treatment chair of the type wherein a headrest having a head supporting portion above a headrest frame is tiltable forwardly and rearwardly and lockable with respect to a headrest support mounted to a backrest, said control device comprising:

a tilting control device mounted to said headrest support for locking and unlocking the rearward tilting of said headrest with respect to said support,

hinge means for permitting the opening and closing of said head supporting portion with respect to said headrest frame, and

linkage means contained in said headrest and responsive to the tilting thereof for opening said head supporting portion as said headrest is caused to tilt forwardly and for



closing said head supporting portion as said headrest is caused to tilt rearwardly.

4,353,596

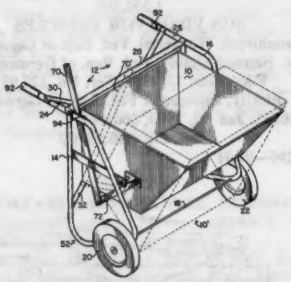
BREAK DOWN DUMPING CART

Calvin Gibson, 111 Daphney Way, E. Palo Alto, Calif. 94303

Filed Aug. 25, 1980, Ser. No. 180,687

Int. Cl.³ B62B *1/24*

U.S. Cl. 298—2 **8 Claims**



1 A break down dumping cart comprising:

hopper means having a bottom portion, a rear wall portion and a pair of opposing side wall portions rising substantially perpendicularly from said bottom portion, and a front wall portion rising obtusely from said bottom portion, said portions defining a containment volume having a fixed maximum dimension; and

support structure means having a plurality of members each of which has dimensions less than said maximum dimension, said support structure including

a pair of spaced apart, generally triangular side frame members having an upper corner, a lower, forward corner and a lower, rearward corner, each side frame member being operably juxtapositioned with one of said side wall portions,

an axle removably coupled between said lower, forward corners of said side frame members,

a pair of wheels removably attached to opposite ends of said axle,

over center support means pivotally coupling said first side frame member to a first side wall portion and said second side frame member to a second side wall portion,

an actuating mechanism for selectively moving said hopper means between a dumping position and an over center non-dumping position, said actuating mechanism including a first support bar attached to said first side frame member, an elongated actuating lever having a mid-length portion pivotally coupled to said first support bar, and a link having a first end pivotally attached to a first end of

said actuating lever and a second end pivotally attached to said first side wall portion, such that forward movement of a second end of said actuating lever causes said hopper means to move forwardly to said dumping postion, and rearward movement of said second end of said actuating lever causes said hopper means to move rearwardly to said over center, non-dumping position;

a pair of handle members each removably attached to one of said side frame members, and

bracing means removably attached between said side frame members,

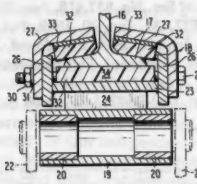
whereby when said dumping cart is dis-assembled said members can be simultaneously stored within the containment volume of said hopper means.

4,353,597

READILY REMOVABLE AND REPLACEABLE WEAR PADS FOR SLIDING BED VEHICLES

Gary L. Shoup, Greencastle, Pa., assignor to Jerr-Dan Corporation, Greencastle, Pa.

Filed Jun. 11, 1980, Ser. No. 158,620
Int. Cl.³ B60P *1/34*
U.S. Cl. 298—12 **12 Claims**



1. A wear pad arrangement particularly for sliding and tilting bed vehicles comprising a pivot bearing means adapted for engagement with a supporting pivot element on a sliding and tilting bed vehicle or the like, a wear pad containment frame fixed to the pivot bearing means for pivotal movement therewith, opposing side upper wear pad retainers on said frame, spaced releasable fasteners for said retainers engaging the retainers and frame and extending across the frame, a lower wear pad on the frame between said spaced fasteners and held against displacement in one direction by the fasteners and in a second direction by the frame, the lower wear pad being adapted to slidably support a rail carried by the bed of a sliding and tilting bed vehicle, and a pair of upper wear pads arranged above the lower wear pad and held within said retainers and restrained by the retainers against displacement in two directions, the upper wear pads adapted to engage upper surfaces of a rail on the bed of a sliding and tilting bed vehicle.

4,353,598

METHOD OF BLASTING PILLARS WITH VERTICAL BLASTHOLES

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

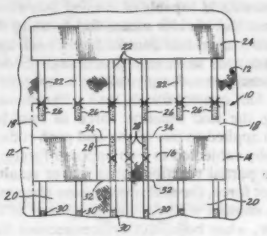
Filed Apr. 18, 1980, Ser. No. 141,604
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **25 Claims**

1. A method for forming a fragmented permeable mass of formation particles in an in situ oil shale retort in a subterranean formation containing oil shale, comprising the steps of:

(a) excavating formation to form at least one horizontally extending void in the subterranean formation, leaving at least one support pillar of unfragmented formation in the void, and leaving zones of unfragmented formation above and below the void and pillar, such a pillar having opposed free faces;

(b) forming an array of explosive charges in at least one of such zones of unfragmented formation for explosively expanding such a zone of unfragmented formation toward the void;

(c) forming an array of spaced apart, vertical, columnar explosive charges substantially along the centerline between the opposed free faces of such a support pillar, the amount of explosive on each side of the centerline being about equal;



(d) detonating explosive in the support pillar for expanding the pillar about equally toward the opposed free faces; and

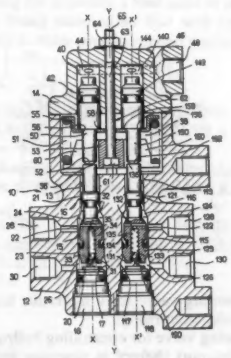
(e) detonating explosive in such a zone of unfragmented formation for explosively expanding the unfragmented formation toward the void for forming a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort.

4,353,599

BRAKING CORRECTOR FOR DOUBLE BRAKING CIRCUIT

Jean-Jacques Carre, Montreuil, and Christian Riquart, Paris, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Oct. 9, 1980, Ser. No. 195,701
Claims priority, application France, Oct. 10, 1979, 79 25199
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—22 R **7 Claims**



1. Braking corrector, for a double braking circuit of a motor vehicle, comprising: a body, two identical parallel bores in the said body defining between them an axis of symmetry, each of the said bores communicating with a corresponding inlet orifice and outlet orifice, two identical pistons sliding in the said bores, each of the said pistons controlling the displacement of a valve element controlling the flow of a fluid under pressure between one of the said inlet orifices and the corresponding outlet orifice, each said pistons presenting an end projecting out from the said body, and a distributor assembly capable of generating, from a control force, two pilot forces acting on the

said ends so as to urge the pistons into the body in the direction for establishing the said flow of fluid, the said fluid under pressure urging the pistons out of the body in the direction for cutting off the flow of fluid, said distributor assembly being of the type permitting to increase the pilot force urging one of the pistons when only the inlet orifice corresponding thereto receives fluid under pressure, characterized in that the said distributor assembly comprises: a cover solid with the said body, two iddentical push rods sliding in the said cover parallelly to the said pistons and capable of coming into abutment with the ends of these last, divider means for dividing the said control force into two equal half control-forces each applied to one of the two push rods so as to urge the said pistons into the said body, resilient means for generating a reaction force opposed to the said half control-forces, and a transmission element for distributing the said reaction force as two partial reaction forces each applied to one of the said push rods, each push rod being thereby subjected to two opposed forces: a half control-force and a partial reaction force whose resultant constitutes the said pilot force, the said transmission element being capable of being in contact with the said push rods in two manners: a first manner, when both inlet orifices receive fluid under pressure, in which the surfaces of contact between the transmission element and the push rods are disposed in a symmetrical way with respect to the said axis of symmetry, and a second manner, when only one of the two inlet orifices receives fluid under pressure, in which, following tilting of the transmission element, the surfaces of contact between said transmission element and the push rods are disposed in an asymmetric manner with respect to the said axis of symmetry, which results in a distribution of the reaction force as two unequal partial forces and a corresponding inequality of the two pilot forces.

4,353,600

NON-LINKAGE TYPE LOAD SENSING VALVE

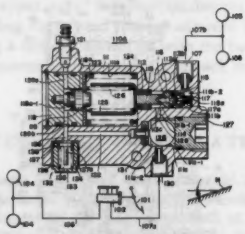
Tatsuo Uchihara, Yokosuka; Tadao Takimoto, Yokohama; Junichi Fujimoto, Yokohama; Katuhiro Morita, Yokohama, and Hitoshi Kubota, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2, 1980, Ser. No. 155,259

Claims priority, application Japan, Jun. 5, 1979, 54-69381

Int. Cl.³ B60T *8/14*

U.S. Cl. 303—24 F **15 Claims**



1. A load sensing valve for a hydraulic brake system for a wheeled vehicle, comprising:

a proportioning valve for controlling hydraulic pressure in a fluid outlet port thereof in response to application of a hydraulic pressure to a fluid inlet port thereof;

a deceleration sensing valve for changing the pressure controlling characteristic of said proportioning valve in accordance with the magnitude of a sealed hydraulic pressure in a fluid sealing chamber, the sealed hydraulic pressure being variable in accordance with the amount of deceleration of said vehicle; and compensating

means for varying the volume of a space communicating with said fluid sealing chamber in accordance with the magnitude of the sealed hydraulic pressure at the time when the sealed hydraulic pressure is lower than a predetermined level which is corresponding to such a pressure as to cause the change of said pressure controlling characteristic of said proportioning valve, wherein said compensating means comprises a piston sealingly and axially movably received in a fixed non-expandable bore to define an expandable chamber which communicates with said fluid sealing chamber, and a spring biasing said piston to move in a direction to reduce the volume of said expandable chamber.

4,353,601

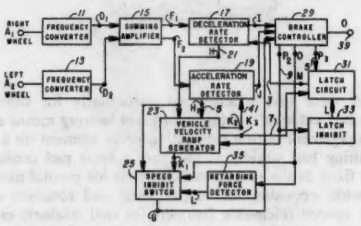
VEHICLE SKID CONTROL

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 837,418, Jun. 30, 1969, Pat. No. 3,617,760, Ser. No. 837,433, Jun. 30, 1969, Pat. No. 3,611,109, Ser. No. 837,497, Jun. 30, 1969, abandoned, and Ser. No. 837,855, Jun. 30, 1969, abandoned. This application Apr. 2, 1970, Ser. No. 25,131

Int. Cl.³ B60T *8/02, 8/08*

U.S. Cl. 303—106 **65 Claims**



1. A skid control module for a vehicle brake control system of the type that generates a brake control output signal varying in accordance with braking conditions, comprising in combination:

(a) signal generating means for generating a variable A.C. signal proportional to vehicle wheel speed;

(b) frequency converter means coupled to said signal generating means for converting said variable A.C. signal to a variable D.C. output signal proportional to vehicle wheel speed;

(c) wheel speed rate detector means coupled to said frequency converter means for generating a first brake inhibit signal when the rate of change of said variable D.C. output signal varies from a predetermined wheel speed rate of change;

(d) circuit means for generating signals proportional to selected braking conditions of the vehicle and the vehicle brake control system;

(e) switching means coupled to said frequency converter means and said circuit means for generating a second brake inhibit signal when said selected braking conditions vary from predetermined parameters; and

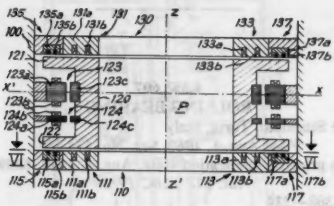
(f) brake controller means coupled to said wheel speed rate detector means and said switching means for generating said brake control signal when said first and second brake inhibit signals are applied thereto, thereby controlling the operation of said vehicle brake control system.

4,353,602

AXIAL ELECTROMAGNETIC BEARING FOR SMOOTH SHAFTS OF LARGE DIAMETER

Helmut Habermann, Vernon, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Continuation of Ser. No. 867,522, Jan. 6, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,494
Claims priority, application France, Jan. 12, 1977, 77 00766
Int. Cl.³ F16C 39/06
U.S. Cl. 308—10 7 Claims



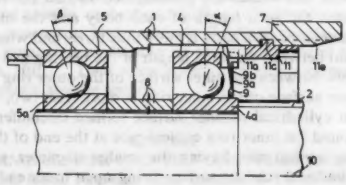
1. A magnetic suspension system for a rotor of large diameter and relatively smaller length, comprising at least one axial electromagnetic bearing and one radial electromagnetic bearing, said radial electromagnetic bearing being controlled by a shaft radial position detector, but said axial bearing including a stator constituted by first and second parts disposed on opposite sides of an armature integral with said rotor, each said part consisting essentially of four independent sectors wherein each said independent sector includes a ferromagnetic core and a winding wherein the only magnetic flux is electromagnetic flux, and a detector integral with each independent sector, the sectors of the first and second parts being symmetrically disposed relative to the armature, and each detector controlling one of the said sectors or groups of sectors defining the stator of the axial bearing so as to control simultaneously the movement of the shaft in the axial sense and rocking movement relative to the two normal radial axes.

4,353,603

BEARING DEVICE

Johan P. Ström, and Leif-Olof Fager, both of Järfälla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 15, 1980, Ser. No. 112,382
Claims priority, application Sweden, Jan. 15, 1979, 7900357
Int. Cl.³ F16C 25/08, 27/04
U.S. Cl. 308—26 1 Claim



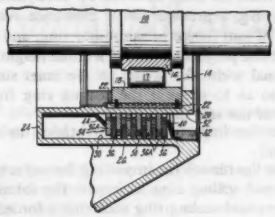
1. A bearing device for supporting associated first and second bodies for rotational movement relative to one another comprising: a bearing having first and second bearing rings which are rotatable relative to each other, said second bearing ring carrying the second body and said first bearing ring carrying the first body by means which permit relative axial movement between said first bearing ring and the first body, said bearing device comprising a spring element which comprises a substantially ring-shaped portion and a plurality of alternating longer and shorter spring arms which are distributed around and project substantially radially from said ring-shaped portion, said longer arms, at their distal ends, acting on the first body to preload the first body in one axial direction and the shorter arms, at their distal ends, acting on the first bearing ring to preload the first bearing ring in the opposite axial direction.

4,353,604

VISCOUS/FRICTION DAMPER

Michael D. Dulberger, Manchester; David H. Hibner, Colchester, and Donald C. Moringiello, Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1980, Ser. No. 215,299
Int. Cl.³ F16C 23/08, 27/04
U.S. Cl. 308—184 A 5 Claims



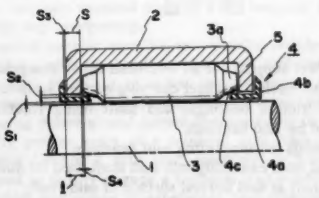
1. For a rotor rotatably supported by a bearing, first damping means having a fluid cavity and fluid therein surrounding said bearing and damping a first magnitude of vibrations, a second damping means having a plurality of axially juxtaposed circular plates surrounding said fluid cavity in a predetermined centered position and being in friction relationship with each other, connection means serially interconnecting said first damping means and said second damping means including resilient means, said resilient means responding solely to a second magnitude of vibrations exceeding the first magnitude of vibrations for displacing alternate friction plates in a direction that is opposite and normal to each adjacent friction plate, and a loading spring for imposing a load axial to said plates and the load thereby being selected so that said resilient means restores said plates to their predetermined centered position.

4,353,605

ROLLER BEARING OF THE TYPE HAVING A SEALING RING CAPABLE OF FORCIBLY CIRCULATING THE LUBRICANT

Moichi Chiba, Yokosuka, and Toshio Suzuki, Chigasaki, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,322
Claims priority, application Japan, Sep. 3, 1979, 54-121571[U]
Int. Cl.³ F16C 33/78, 19/26
U.S. Cl. 308—187.2 15 Claims



1. A roller bearing containing a lubricant therein which comprises:

(a) an outer ring hving at least an annular flange at one axial

end thereof, the flange extending in a radially inward direction;

(b) a plurality of rollers housed in said outer ring for receiving a shaft;

(c) at least a sealing ring interposed between the inner circumference of said flange and the outer circumference of the shaft, and wherein said sealing ring comprises:

(1) a cylindrical portion having an axial length slightly larger than the thickness of said flange of said outer ring, an inside diameter slightly larger than the outside diameter of the shaft, and an outside diameter slightly smaller than the inside diameter of the flange of said outer ring such that the cylindrical portion can be loosely interposed between said flange and said shaft with predetermined clearances;

(2) a flanged annular ring portion extending radially outwardly from the outer axial end of said cylindrical portion and keeping a predetermi..ed clearance with the outer surface of said flange of said outer ring; and

(3) at least one projection having a radial height and circular directional width for laying on the inner surface of said flange so as to prevent the sealing ring from escaping outside of the said flange; and

(d) means for imparting forced rotation to said sealing ring, and

wherein the means for imparting forced rotation coacts with said sealing ring to impart the forced rotational force to said sealing ring such that a forced circulation of the lubricant is effected through said clearance by centrifugal scattering force generated along said surface of said flange annular portion when said sealing ring is driven by said means for imparting forced rotation.

4,353,606

MOUNTING FOR A DRIVEN WHEEL

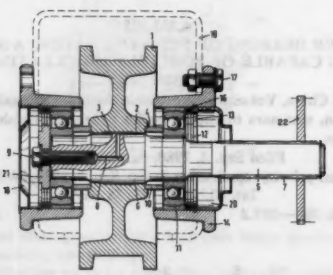
Harald Bitsch, Witten, and Karl Knaack, Dortmund, both of Fed. Rep. of Germany, assignors to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,776

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922330

Int. Cl.³ F16C *23/06, 35/06*

U.S. Cl. 308—189 R **10 Claims**



1. A wheel support for an overhead crane comprising:

(a) a shaft having a wheel carrying curved surface;

(b) anti-friction bearings, said shaft being rotatably supported by said bearings;

(c) bushings for supporting said bearings;

(d) an oil duct extending into said shaft, said oil duct exiting said shaft at said curved surface of said shaft;

(e) a wheel having a central bore hole, a portion of the central bore hole of said wheel overlying said curved surface of said shaft where said oil duct exits from said shaft;

(f) an oil pressure providing means for supplying oil, under pressure, to said oil duct and to said portion of the central bore hole of said wheel;

(g) said bushings being provided with selectively secured positioning means; and

(h) selected spacer ring members are provided between said positioning means and said bearings for adjustably positioning said bearings with respect to said bushings.

4,353,607

ROLLING BEARING

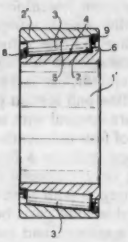
Giuseppe Sturniolo, Turin, Italy

Filed Aug. 1, 1980, Ser. No. 174,357

Claims priority, application Italy, Aug. 1, 1979, 68594 A/79

Int. Cl.³ F16C *19/26*

U.S. Cl. 308—214 **1 Claim**



1. A rolling bearing comprising:

an inner ring and an outer ring, said inner ring having an outer conical race and outer ring having an inner conical race,

one or more rows of rolling bodies disposed between the said rings so that said bodies roll between said conical races,

said inner ring having an inner cylindrical surface and said outer ring having an outer cylindrical surface,

each of said rolling bodies having an outer conical surface and the axes of said bodies lying on a further conical surface,

wherein said bodies are dimensioned so that the ratio between the axial length of each body and the maximum diameter of each body is more than three, and wherein the ratio between the axial length of the bearing and the distance between the outer surface of the outer ring and the inner surface of the inner ring is more than two,

a first cylindrical retainer surface formed circumferentially around the inner ring conical race at the end of the inner ring conical race having the smaller diameter, said first cylindrical retainer surface being open to an end of said inner ring,

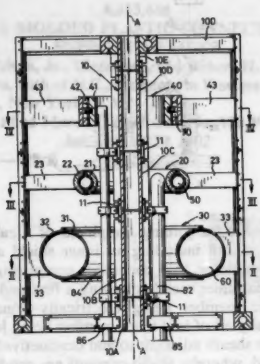
a second cylindrical retainer surface formed circumferentially around the outer ring conical race at the end of the outer ring conical race having the larger diameter, said second cylindrical retainer surface being open to an end of said outer ring opposite from said end of said inner ring,

a first retaining ring constructed of a deformable plastic material and secured by an interference fit to said first cylindrical retainer surface and second retaining ring constructed of a deformable plastic material and secured by an interference fit to said second cylindrical retainer surface.

4,353,608
SYSTEM OF COLLECTORS FOR CONDUITS IN A DWELLING

Julien G. Massau, Genistroit, 132, 1348 Louvain-la-Neuve, Belgium

Filed Jun. 19, 1980, Ser. No. 160,789
Claims priority, application Belgium, Jun. 21, 1979, 195.874
Int. Cl.³ H01R *39/00, 39/14*
U.S. Cl. 339—2 R **7 Claims**



1. System of collectors for conduits in a dwelling having an assembly revolving around a rotation axis, said system comprising:

a fixed central spindle (**10**) extending coaxially with the rotation axis;

an annular collector (**20**) comprising a first ring and a second ring, of any desired cross section, associated with each other so as to define at least one annular chamber (**50**) extending symmetrically about said rotation axis, the first ring (**21**) being fixed and integrally mounted on the fixed central spindle, and the second ring (**22**) being integral with the revolving assembly of the dwelling, said second ring being mounted on the first ring so as to be capable of moving relative to the first ring by rotating about said rotation axis;

at least one first transverse passage (**80**) formed in the first ring to bring said annular chamber into communication with a fixed conduit;

at least one second transverse passage (**90**) formed in the second ring to bring said annular chamber into communication with a conduit of the revolving assembly; and

a plurality of further coaxial annular collectors (**30, 40**) extending in parallel planes perpendicular to the fixed central spindle, each of said further collectors comprising two concentric rings, wherein the fixed central spindle (**10**) comprises a plurality of sections fixed end to end (**10A, 10B, . . .**) and wherein each collector is mounted on a separate spindle section.

4,353,609
TERMINAL FOR PRINTED CIRCUIT BOARDS

Richard M. Haas, Phoenix, Ariz., assignor to Henes Products Corp., Phoenix, Ariz.

Filed Oct. 2, 1980, Ser. No. 193,382
Int. Cl.³ H01R *9/09, 13/428*
U.S. Cl. 339—17 C **2 Claims**

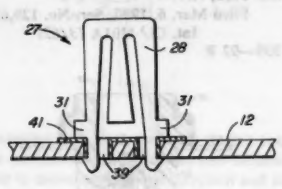
1. A connector for a printed circuit board comprising:

a relatively flat member having a substantially E-shaped configuration,

said E-shaped configuration comprising three arms, two of which form substantially identical leg members extending longitudinally of said member along opposite edges thereof,

the third arm of said E-shaped configuration being shorter in length than the other two arms and tapering from its free end to a narrower width at the bite of the E-shaped configuration, said third arm lying in a coplanar arrangement with said other two arms and spaced therefrom by two substantially equally configured slots extending from the free end of said third arm along opposite edges thereof toward the other end of said member,

the free ends of said legs being notched along said opposite edges of said member for receiving therein a portion of the



edges of plated-through holes in an associated circuit board when said legs of said member are mounted thereon,

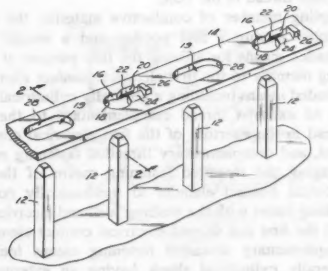
the opposed edges of the free ends of said legs being canted outwardly from their ends longitudinally therealong, and

the E-shaped configuration, when mounted to said board, being formed to slidably receive thereabout, a female clip with bent over arms, the third arm of the connector providing continuous flat surface means for secure electrical engagement with said bent over arms.

4,353,610
ELECTRICAL CONDUCTING STRIP

Paul M. Deters, Manhattan Beach, Calif., assignor to Bussco Engineering, Inc., El Segundo, Calif.

Filed Jul. 1, 1980, Ser. No. 165,038
Int. Cl.³ H01R *31/08*
U.S. Cl. 339—19 **10 Claims**



1. An electrical conducting strip for forming a path for electricity between terminal posts of a bus bar, said electrical conducting strip comprising:

an elongated metallic member, said metallic member having a opening arrangement formed therein, said opening arrangement including an access opening and an engaging opening, said access opening being connected to said engaging opening, said access opening being of a size to readily permit entry of a terminal post, said engaging opening having a side wall assembly defining a size adapted to tightly engage a terminal post establishing an electrical connection therebetween, said elongated member to be moved longitudinally to relocate the terminal post from said access opening into said engaging opening; and

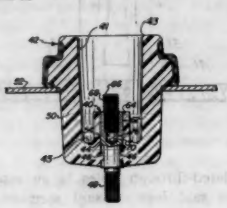
stop means attached to said elongated metallic member, said stop means to connect with said engaging opening, said stop means to abut said terminal post when said terminal post is fully inserted within said engaging opening.

4,353,611

BUSHING WELL STUD CONSTRUCTION

Larry N. Siebens, Great Meadows, and Alan D. Borgstrom, Hackettstown, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 129,618
Int. Cl.[3] H01A *13/621*
U.S. Cl. 339—92 R 7 Claims



1. A bushing well for use in connection with a bushing insert in a high voltage electrical distribution system, the bushing insert having an insert end portion including a first electrical contact element of conductive material, the first electrical contact element including an aperture therein and an internal thread in the aperture, said bushing well comprising:

a bushing well member of dielectric material;

a receptacle in the bushing well member, the receptacle extending between an opening, for receiving the insert end portion of the bushing insert, and a remote closed bottom spaced from the opening;

a second electrical contact element of conductive material integral with the bushing well member at the closed bottom of the receptacle, the second electrical contact element having a threaded fastening means therein including a hole in the second electrical contact element and an internal thread in the hole;

a coupling member of conductive material, the coupling member having a first portion and a second portion, threaded means for affixing the first portion of the coupling member to the first electrical contact element, said threaded means including a generally cylindrical pin having an external thread complementary to the internal thread in the aperture of the first electrical contact element, and complementary threaded fastening means for engaging the threaded fastening means of the second electrical contact element to mechanically couple the bushing insert with the bushing well and electrically connect the first and second electrical contact elements, the complementary threaded fastening means including a generally cylindrical shank having an external thread complementary to the internal thread in the hole of the second electrical contact;

locking means establishing a locking force between the coupling member and the second electrical contact element for tending to lock the coupling member against rotation relative to the second electrical contact element upon engagement of the external thread of the shank with the internal thread of the hole and seating of the second portion of the coupling means within the second electrical contact element; and

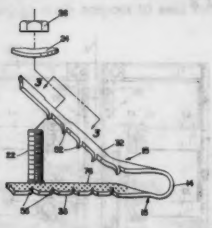
wrenching means integral with the second portion of the coupling means for enabling wrenching of the second portion against the locking force to allow selective removal of the second portion from the complementary threaded fastening means independent of the presence of the first portion of the coupling means.

4,353,612

SHIELD CONNECTOR

Richard G. Meyers, Euclid, Ohio, assignor to The National Telephone Supply Company, Cleveland, Ohio

Filed Jun. 6, 1980, Ser. No. 156,932
Int. Cl.[3] H01R *4/24*
U.S. Cl. 339—95 R 19 Claims



1. A connector for joining the shield of a cable having a tubular cable sheath including an inner shield and an outer jacket, to a conductor, said connector comprising:

a longitudinal inner member having a first and second end, said inner member being electrically conductive, and substantially all of said inner member being located inside said cable sheath adjacent to and conductively contacting said shield, whereby shield currents are conducted to said inner member,

a longitudinal outer member having a first and a second end, said outer member being located outside said cable sheath adjacent to said outer jacket and in longitudinal alignment with said inner member,

at least one of said inner and outer members being elastic and presenting a longitudinally convex curvature toward the other member,

first joining means joining said first end of said inner member to said first end of said outer member,

second joining means joining said second end of said inner member to said second end of said outer member, said cable sheath being compressed by the action of said first and said second joining means between said inner and said outer members, and

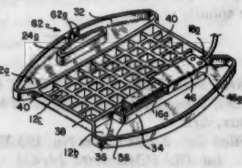
contact means electrically connecting said inner member to said conductor.

4,353,613

ELECTRICAL OUTLET CORD AND HOLDER

Arthur Carlow, Beverly, Mass., assignor to Carlco, Inc., Beverly, Mass.

Filed Apr. 14, 1980, Ser. No. 140,097
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—119 C 10 Claims



1. In combination, a terminated electrical cord and holder therefor, said holder comprising a relatively large, thin bobbin formed as a unitary plastic piece and having a pair of enlarged ends and an intervening narrower waist, said waist being formed as a grid extending through the holder whose webs project substantially perpendicularly to the general plane of the holder; means defining a grip opening in one enlarged end

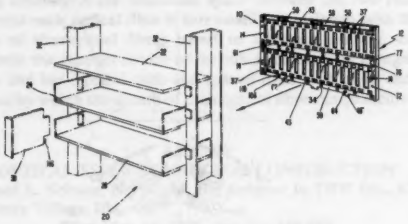
of the holder; means defining one or more openings in the other enlarged end, electric outlet means mounted to said other end, said outlet means having the plug-receiving portions thereof exposed in said openings in said other end, and a length of electrical cord having one end electrically connected to said outlet means and having its opposite end terminating in an electrical connector, said cord being arranged to be wound around the waist of the holder.

4,353,614

UNITARY MOLDED PLASTIC CONNECTOR PLUG SUPPORT MEMBER

John O. Etchison, Jr., Clemmons, and Robert H. W. Jones, Jr., Greensboro, both of N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,497
Int. Cl.³ H02B *1/02*
U.S. Cl. 339—125 R **16 Claims**



1. A unitary molded plastic backplane member for equipment of a type in which substrate circuit devices on one side of the backplane member are inserted into connector plugs mounted on an opposite side of the backplane member, which comprises:

an essentially planar main body having opposite first and second sides and having at least one row of openings extending through the main body, the openings being dimensioned for the insertion of substrate circuit devices from the first side of the main body through the openings; and

at least one row of spaced pedestals integrally molded with the main body and projecting from the second side of the main body to define channels between the pedestals, the pedestals having openings extending therethrough for the reception of the connector plugs in the openings and merging with respective ones of the openings in the main body.

4,353,615

DYNAMIC MOUNTING FOR HOLOGRAPHIC SPINNERS

Charles J. Kramer, Pittsford; Alan F. McCarroll, Rochester, both of N.Y., and Tibor S. Fisli, Los Altos Hills, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 921,411, Jul. 3, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,215
Int. Cl.³ G02B *5/32*
U.S. Cl. 350—3.71 **24 Claims**

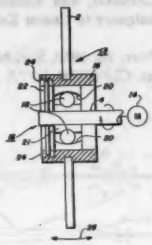
1. A holographic scanning mechanism including:

a rotatable shaft;

a holographic spinner having on its surface at least one holographic facet;

a hub assembly having a first member which is fixedly connected to said spinner and a second member which is located between said first member and said shaft, and said second member movable relative to said first member in a direction which is transverse to the plane of the shaft rotation;

drive means for coupling the angular velocity of the shaft to the spinner; and



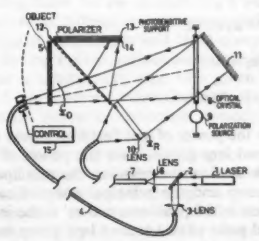
means for rotating said shaft whereby during rotation the transverse movement of said second hub member permits the spinner to move in the same direction and achieve its optimum perpendicular alignment.

4,353,616

OPTICAL DEVICE FOR PRINTING PLANAR OBJECTS

Pierre Leclerc; Jean-Pierre Huignard, and Philippe Aubourg, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 13, 1980, Ser. No. 121,178
Claims priority, application France, Feb. 16, 1979, 79 04016
Int. Cl.³ G03H *1/22, 1/28, 1/32*
U.S. Cl. 350—3.75 **12 Claims**



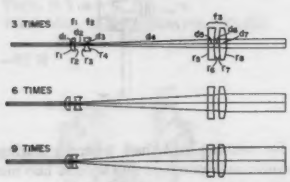
1. An optical device for printing duplicates of planar objects comprising: a coherent light source; an illuminating device forming an object wave for illuminating the object using the coherent light from the source, said illuminating device also forming a reference wave using the coherent light from the source; an optically active device for receiving the object wave emerging from the object and the reference wave; a mirror for producing in real time a wave phase-conjugate with the incident object wave; a means supporting a photosensitive recording medium for receiving said wave phase-conjugate to form thereon a real image of the object to be printed; the illuminating device being such that the object is successively illuminated several times in order to superimpose, in the photosensitive recording medium, a plurality of images of the object having uncorrelated noise.

4,353,617

OPTICAL SYSTEM CAPABLE OF CONTINUOUSLY VARYING THE DIAMETER OF A BEAM SPOT

Jun Tokumitsu, Kawasaki, and Kazuo Minoura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,038
Int. Cl.³ G02B 27/17, 15/16
U.S. Cl. 350—6.8 6 Claims



1. An optical system capable of continuously varying the diameter of a light beam spot, comprising:

a light source emitting a light beam;

a light receiving medium for receiving the light beam emitted from said light source;

optical means disposed between said light source and said light receiving medium for directing the light beam from said light source to said light receiving medium, said optical means including means for causing the light beam to become parallel to the optical axis of said optical means in a particular area; and

an afocal zoom lens, disposed in said area of said optical means, for continuously varying the diameter of the parallel light beam as it emerges therefrom with respect to the diameter of the parallel light beam as it is incident thereon, said afocal zoom lens comprising, from the light beam incident side to the light beam emergent side thereof, a positive first lens group, a negative second lens group and a positive third lens group satisfying the following relations:

$$0.027<\phi_1<0.055$$

$$-0.34<\phi_2<-0.18$$

$$0.0087<\phi_3<0.02$$

$$12.0<e_1'<30.0$$

$$42.0<e_2'<75.0$$

where, ϕ_1 is the power of said first lens group, ϕ_2 is the power of said second lens group, ϕ_3 is the power of said third lens group, e_1' is the interval between the principal point of said first lens group and the principal point of said second lens group in their initial positions, and e_2' is the interval between the principal point of said second lens group and the principal point of said third lens group in their initial positions.

4,353,618

OPTICAL ARRANGEMENT FOR THE REFLECTING MICROSCOPIC EXAMINATION OF AN OBJECT

Willi Hagner, Solms; Andreas Thaer, Leihgestern, and Francis Bigar, Zurich, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,819
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848590
Int. Cl.³ G02B 21/12
U.S. Cl. 350—91 7 Claims

1. An optical system for the reflecting microscopic examination of a rear surface of a biological tissue object, comprising:

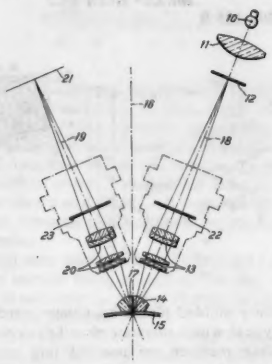
imaging optical means for providing an illuminating beam having a path on a first axis;

viewing means for providing an observation beam having a path along a second axis;

lens means comprising:

a first lens portion positioned in said illuminating beam path for directing said illuminating beam to said object along a first direct lens path leading from an illuminating beam entry surface on the opposite side of said first lens portion from said object through a flat lens surface adjacent said object;

a second lens portion positioned in said observation beam path for directing reflected light from said rear surface of said object to said observation beam path along a second direct lens path leading from said flat lens surface adjacent said object through an observation beam exit surface on the opposite side of said second lens portion from said object;



said first and second lens paths forming an angle of not more than 90° therebetween in the region of said lens means; and

said first and second lens portions having a light impermeable surface therebetween, said light impermeable surface being positioned in a plane bisecting the angle between the first and second axes,

said light impermeable surface comprising means for preventing undesirable reflected and refracted light from said illuminating beam from entering said observation beam path and for permitting reflected light from said rear surface to enter said observation beam path to be examined;

said lens means including means for positioning said light impermeable surface along a normal to said object rear surface and perpendicular to the plane defined by said first and second axes.

4,353,619

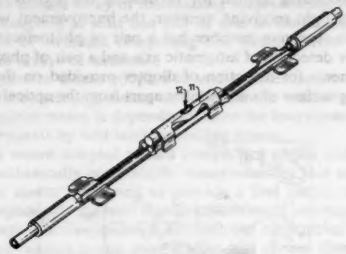
DISCONNECTABLE OPTICAL FIBRE JOINT

David T. Parr, Warrington, England, assignor to BICC Limited, London, England

Filed May 12, 1980, Ser. No. 148,925
Claims priority, application United Kingdom, Jan. 30, 1980, 8003181; Apr. 3, 1980, 8011193
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 6 Claims

1. A disconnectable optical fibre joint comprising a subassembly comprising a substantially rigid elongate support device and two cylindrical rods carried by the support device and constrained by the support device to lie in tangential contact with one another with their longitudinal axes substantially parallel, the cylindrical rods defining between them an interstitial space; two optical fibres aligned in the interstitial space with their end faces substantially abutting; an elongate holding member positioned over the ends of the optical fibres

and covering the interstitial space over at least a part of its length; and at least one resilient spring clip applied over the elongate holding member and engaging the sub-assembly to urge the elongate holding member towards the two rods so that the optical fibres are secured with their end faces substantially abutting in the interstitial space between the two rods; wherein each optical fibre is surrounded by a sheath with the ends of the optical fibres bared to facilitate jointing, and wherein the support device of the sub-assembly is of elongate form and has integral with and spaced from each of its ends, means by which the sheath of each optical fibre can be secured.



4,353,620

OPTICAL FIBER CONNECTOR CONSTRUCTION

Ronald L. Schultz, Northfield, Ill., assignor to TRW Inc., Elk Grove Village, Ill.

Filed May 14, 1980, Ser. No. 149,889
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **25 Claims**

1. A connector for optical fibers adapted to be joined in an optical signal transmissive connection comprising at least three flexible convex surfaces defining an open-ended passageway in which optical fibers are to engage in optical signal transmissive relation intermediate the passageway open ends; the ends of said surfaces converging into terminal exterior edges; discrete means engaging said edges for exerting forces on said edges directed toward said passageway to thereby flex said surfaces and reduce the size of said passageway defined thereby, said flexible surfaces being substantially uniform and defining a rigid flexing system in which inward flexing which increases the concavity of one of said surfaces results in substantially the uniform flexing of the remainder of said convex surfaces.

4,353,621

OPTICAL TOYS FOR REVERSING SIGHTED IMAGES

Mary W. Geer, 14024 SE. 44th Pl., Bellevue, Wash. 98006, and Charles W. Geer, deceased, late of Bellevue, Wash. (by Mary W. Geer, executrix)

Filed Jun. 9, 1978, Ser. No. 914,027
Int. Cl.³ G02B *7/18*; A63H *33/22*
U.S. Cl. 350—145 **7 Claims**

1. An optical game comprising:
(a) selectively positionable means for making a pathway which is adapted to be attempted to be walked by a participant while playing said game; and
(b) a sighted image reversing optical toy comprising:
(i) at least one means for reversing sighted images left to right and vice versa, so a participant sees his left foot on his right side and vice versa; and
(ii) a support means positionable before said participant's eyes which carries said at least one means for reversing

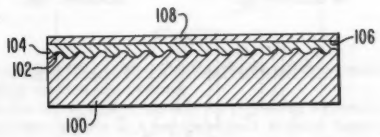
sighted images; wherein during said game said participant looks through said optical toy and attempts to walk said pathway despite his seeing reversed sighted images through said optical toy.

4,353,622

RECORDING BLANK AND METHOD FOR FABRICATING THEREFROM DIFFRACTIVE SUBTRACTIVE FILTER METAL EMBOSSING MASTER

Michael T. Gale, Wettswil, and James Kane, Zumikon, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,399
Int. Cl.³ G02B *5/18*
U.S. Cl. 350—162 SF **5 Claims**



1. A recording blank for use in recording a metal master of a given surface relief diffractive structure spatially modulated by screened spatial information; said blank comprising:
a substrate having a given surface composed of a first given metal that is substantially inert to a given etchant, said surface of said substrate incorporating said given surface relief pattern diffractive structure unmodulated by said screened spatial information;
said given surface of said substrate being covered by a layer of a second given metal which is etchable by said given etchant, said layer of said second given metal having one of two opposite surfaces in intimate contact with said given surface relief pattern, the other of said two opposite surfaces being smooth and level, and
said other surface of said layer of said second given metal being covered by a layer of photoresist.

4,353,623

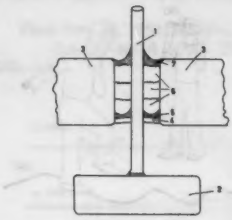
LEADTHROUGH FOR ELECTRIC CONDUCTORS

Hermann F. L. Maier, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1980, Ser. No. 158,659
Int. Cl.³ G02F *1/07*; B32B *31/00*; H01B *17/26*
U.S. Cl. 350—391 **2 Claims**

1. A leadthrough for electric conductors through glass walls or quartz glass walls, in particular for electrode connections in Kerr cells, characterized in that the electric conductor (1) is fixed in the lower part of an aperture through the wall (3) facing the interior of the cell by means of a ring (4) of polytet-

rafluoroethylene in such manner that the conductor is held in the center of the aperture, that a layer (5) of cyano acrylate talcum cement is provided over the ring inside the aperture, that a layer (6) of a granular filler soaked with cyano acrylate



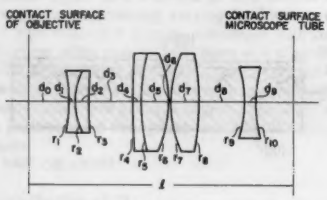
adhesive is present above said layer in the blind hole thus formed, and that the uppermost part of the aperture directed outwards is filled and sealed with a layer (7) of cyano acrylate talcum cement.

4,353,624

AFOCAL RELAY LENS SYSTEM

Ken Yonekubo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 133,651
Claims priority, application Japan, Mar. 30, 1979, 54-37973
Int. Cl.³ G02B 9/58, 13/00
U.S. Cl. 350—453 **3 Claims**



1. In a relay lens system arranged between an objective lens and an eyepiece and used for relaying an image of an object formed by said objective lens, a relay lens system is designed as an afocal lens system having a magnification level of 1X and comprises a first lens group, a second lens group and a third lens group, wherein said first lens group is a negative lens group, said second lens group is a positive lens group and said third lens group is a negative lens group, and wherein said relay lens system is located between the objective and the image position of the objective.

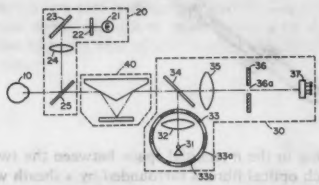
4,353,625

EYE-REFRACTOMETER DEVICE

Masao Nohda, Yokohama, and Izumi Umemura, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,602
Claims priority, application Japan, Jun. 2, 1979, 54-69083
Int. Cl.³ A61B 3/14, 3/10
U.S. Cl. 351—13 **8 Claims**

1. In an eye-refractometer device having a beam splitter; a projection optical system disposed in one optical path of said beam splitter to project a beam of light into the pupil of an eye to be examined therethrough and to effect scanning linearly thereof; a condensing optical system including a condenser lens fixedly provided in the other optical path of said beam splitter, a diaphragm member fixedly provided behind said condenser lens and a light receiving member fixedly provided further behind said diaphragm member at a conjugate point with the cornea of said eye relative to said condenser lens, said condensing optical system being disposed to condense the reflected light from the fundus of said eye on said light receiving member through said beam splitter; beam rotating member disposed at the eye side of said beam splitter to rotate the beam about the center of the optical path as its rotational axis; and a signal processing system for processing the signals coming from said light receiving member, the improvement wherein said light receiving member has a pair of photoelectric elements for detection of astigmatic axis and a pair of photoelectric elements for detection of diopter provided on the light receiving surface of said member apart from the optical axis of



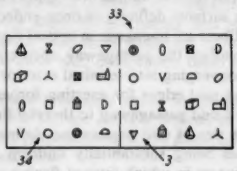
said condenser lens, said pair of astigmatic axis detection photoelectric elements being positioned on a straight line normal to the scanning direction of the beam projected through said projection optical system whereas said pair of diopter detection photoelectric elements being positioned on a line extending in said scanning direction, said signal processing system including first and second phase difference detection means for detecting the phase difference between the output signals from said pair of astigmatic axis detection photoelectric elements and the phase difference between the output signals between said pair of diopter detection photoelectric elements, respectively.

4,353,626

VISUAL RECOGNITION TESTING APPARATUS

Leslie H. R. Harrison, Orchard End, Furze Hill, Wimborne, Dorset, England

Filed Jan. 28, 1980, Ser. No. 115,765
Int. Cl.³ A61B 3/02
U.S. Cl. 351—36 **23 Claims**



1. Apparatus for use in testing visual recognition, the apparatus comprising:

a first array of illuminating means individually selectable for energisation;

first register means coupled to the first array of illuminating means and adapted to select for energisation each illuminating means of the first array in accordance with a respective first predetermined sequence;

a second array of illuminating means individually selectable for energisation;

second register means coupled to the second array of illuminating means and adapted to select for energisation a chosen illuminating means in the second array;

mechanically controllable means for causing the said second register means to select for energisation in accordance with a respective second predetermined sequence a set of the illuminating means terminating with a chosen illumi-

nating means and for establishing a signal indicative of selection of the said chosen illuminating means;

a first array of terminals representative of the said first array of illuminating means;

a second array of terminals representative of at least some of said second array of illuminating means, means for interconnecting at least one pair of said terminals, each such pair of terminals comprising one terminal from each of said arrays of terminals;

comparator means coupled to said register means and said interconnecting means to compare the contents of said register means in dependence upon the interconnection of terminals by said interconnecting means;

logic means coupled to said comparator means and to said mechanically controllable means whereby said comparator means is adapted to provide a first output signal in response to the said signal indicative of selection when there is correspondence between the contents of the second register means representing said chosen illuminating means and the contents of the first register means, and to provide a second output signal in response to the said signal indicative of selection when there is absence of such correspondence;

error memory means coupled to said register means and said arrays of illuminating means and to said logic means and adapted to store respective addresses for the selected illuminating means of the first array of illuminating means and the chosen illuminating means of the second array of illuminating means in response to the said second output signal; and

review means coupled to the error memory means and actuable to cause said error memory means to establish energisation of respective illuminating means in said arrays of illuminating means in accordance with the respective stored addresses.

4,353,627
OVER-HEAD PROJECTOR WITH PARTIAL PROJECTION DEVICE

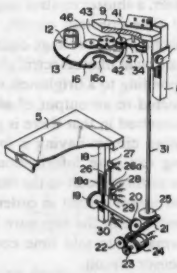
Takashi Maemori, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1980, Ser. No. 194,827

Claims priority, application Japan, Oct. 11, 1979, 54-140699[U]

Int. Cl.³ G03B *1/48, 21/14*

U.S. Cl. 353—24 **7 Claims**



1. An overhead projector capable of projecting at least a part of an original image in enlarged scale comprising a vertically movable stage for supporting an original transparent image thereon and movable from a normal, lowered position wherein said stage supports said original image for normal projection to at least one raised position for projection of a part of said image in enlarged scale; projection lens group means carrying a plurality of lenses each corresponding with a respective one of said lowered and raised positions of said vertically movable stage, said lenses including a standard lens for projecting the entire original image when said stage is at its lowered position and at least one partial projection lens for projecting a part of the original image when said stage is at a respective raised position thereof; automatic projection lens selecting means for automatically selecting one of the lenses of said projection lens group for according to the respective position of the stage; stage moving means for moving said stage between its raised and lowered positions; and mechanical linkage means associating said lens selecting means with said stage moving means so that the position of the stage and the projection lens selected by the lens selecting means automatically correspond correctly with each other for each said vertical position of said stage.

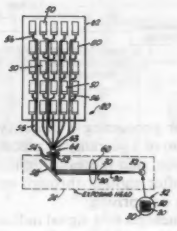
4,353,628
APPARATUS FOR PRODUCING IMAGES ON RADIATION SENSITIVE RECORDING MEDIUMS

Richard M. Berman, Dresher, Pa., assignor to Delta Scan, Inc., Willow Grove, Pa.

Filed May 8, 1981, Ser. No. 261,952

Int. Cl.³ B41B *13/00, 21/14*

U.S. Cl. 354—5 **33 Claims**



1. Apparatus for producing an image on a radiation sensitive recording medium, comprising:

radiation signal means operable for producing a plurality of radiation signals at a predetermined location from said radiation signal means, said plurality of radiation signals being arranged to define a matrix having m rows and n columns in which m and n are each integers greater than 1, and said matrix of signals being of a predetermined size at said predetermined location;

mounting means for mounting a radiation sensitive recording medium and said radiation signal means to provide relative movement between said recording medium and said radiation signal means so that respective portions of said recording medium are presented at said predetermined location from said radiation signal means; and

control means for selectively operating said radiation signal means so as to selectively produce at selected intervals one or more of said radiation signals as said radiation signal means and said recording medium move relative to one another to thereby expose a series of dot areas on said recording medium to produce said image, each of said exposed dot areas being produced during one of said selected intervals and comprising one or more exposed subdot areas corresponding in number to the number of said radiation signals selectively produced during said one interval to produce said exposed dot area whereby the size of said exposed dot area is less than or equal to said predetermined size and corresponds to the size at said predetermined location of said radiation signals selectively produced for said selected interval, said control means being operable so that said radiation signals selectively produced during each of said intervals are in a corresponding preselected pattern dependent on the number of radiation signals selectively produced during each said interval, there being a one to one relationship between the number of radiation signals selectively produced and said corresponding preselected pattern of said radiation signals

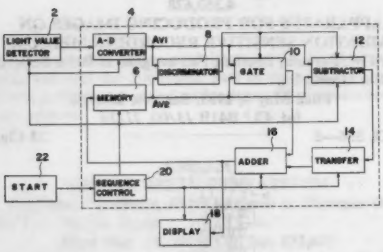
selectively produced for exposing said dot areas on said recording medium.

4,353,629

SYSTEM AND METHOD FOR CALCULATING A LIGHT INFORMATION VALUE

Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1979, Ser. No. 8,334
Claims priority, application Japan, Feb. 7, 1978, 53-13287
Int. Cl.³ G03B *17/18*; G01J *1/42*
U.S. Cl. 354—23 D **20 Claims**



1. A system for processing a plurality of signals used for calculating the sum of a plurality of pieces of light information in logarithmic value, said pieces of light information obtained sequentially one after another through an individual measurement, said system comprising:

means for producing a first signal indicative of a logarithmic value of one piece of light information;

storing means for storing a second signal;

means for producing a third signal indicative of a difference between the first and second signals;

means responsive to the third signal for producing a fourth signal which is in a predetermined relationship to the third signal; and

means for adding said fourth signal to one of the first and second signals, the sum of said addition being applied to the storing means for renewing the second signal.

4,353,630

EXPOSURE CONTROL DEVICE FOR A CAMERA HAVING A DIGITAL OPERATION DEVICE

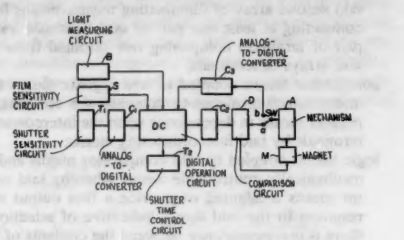
Fumio Ito; Tadashi Ito, both of Yokohama; Soichi Nakamoto, Machida, and Yasuo Isobe, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 729,788, Oct. 5, 1976, abandoned, which is a continuation of Ser. No. 485,634, Jul. 3, 1974, abandoned. This application Jan. 23, 1978, Ser. No. 871,492
Claims priority, application Japan, Jul. 4, 1973, 48-75529
Int. Cl.³ G03B *7/14*
U.S. Cl. 354—29 **3 Claims**

1. In a camera operable both in a shutter time preference mode and in a diaphragm preference mode, having diaphragm control means which is provided with two input terminals to determine an aperture size of a taking lens by comparing two input signals applied through the two input terminals and shutter control means which determines an exposure time based on an input signal, the improvement comprising:

(a) diaphragm value producing means for producing an electrical signal corresponding to the aperture size, the diaphragm value producing means having an output for providing said signal; and

(b) change-over switch means which connects the output of said diaphragm value producing means to one of the two input terminals of said diaphragm control means for applying an instantaneous value indicating the aperture size to said diaphragm control means when the shutter time preference mode is selected, and which operatively connects the output of said diaphragm value producing means to an input receiving stage of said shutter control means



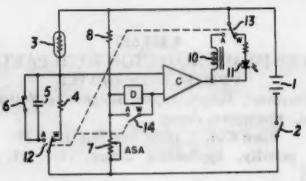
for applying a diaphragm value indicating the aperture size preferentially set when said diaphragm preference mode is selected.

4,353,631

EXPOSURE INFORMATION INPUT CIRCUIT FOR ELECTRIC SHUTTER

Yuzuru Takazawa, and Shinji Nagaoka, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Apr. 25, 1980, Ser. No. 143,912
Claims priority, application Japan, Apr. 28, 1979, 54-52863
Int. Cl.³ G03B *17/18*
U.S. Cl. 354—51 **15 Claims**



1. An exposure information feeding circuit in an electric shutter having a time constant circuit including a photoelectric element and a capacitor, a shutter control magnet connected to an output from said time constant circuit, a low brightness sensor circuit including a partial voltage circuit comprised of a comparison resistor and said photoelectric element for producing a voltage corresponding to a brightness of an object, and a display circuit connected to an output of said low brightness sensor circuit, characterized in that there is provided an exposure information setting circuit having a function correction circuit for correcting exposure information applied by said exposure information setting circuit to the time constant circuit or the low brightness sensor circuit in order to apply a reference voltage representative of the exposure information other than brightness information to said time constant circuit and the low brightness sensor circuit.

4,353,632

ELECTROMAGNETICALLY DRIVEN SHUTTER DEVICE

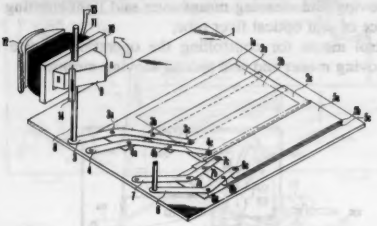
Syuichiro Saito, Kawasaki, and Masanori Uchidoi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,632
Claims priority, application Japan, Jan. 8, 1980, 55-499[U]
Int. Cl.³ G03B *9/08, 15/03*
U.S. Cl. 354—133 **5 Claims**

1. An electronically driven shutter comprising:

at least one shutter blade for opening and closing an optical path by displacement of said blade;

a permanent magnet member forming a magnetic field, a conductive member in the magnetic field of the permanent magnet, the one of the permanent magnet member and the conductive member being movable and connected to the shutter blade, the other member being fixed in the camera so that when a current is supplied to the conductive mem-



ber along a predetermined direction an electromagnetic force operates between the permanent magnet member and the conductive member and displaces the movable one of the members so that the shutter blade opens and closes the photographic optical path at a given speed; and

a magnetic sensor at a predetermined position relative to one of the members so as to detect the displacement position of the movable one of the members.

4,353,633

CAMERA WITH MOTOR DRIVE DEVICE

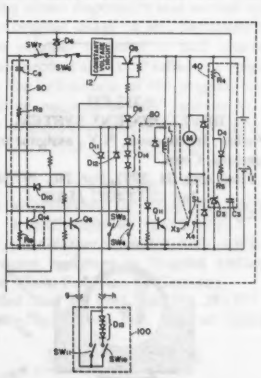
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,288

Claims priority, application Japan, Mar. 22, 1980, 55-35747

Int. Cl.³ G03B *1/18, 17/38*

U.S. Cl. 354—173 **24 Claims**



1. In a motor drive device to be coupled with a camera for driving a film advancing mechanism thereof, wherein each of said camera and motor drive device is provided with an electric control device and a power supply circuit for power supply to said electric control device, wherein said camera ia provided with a power supply control circuit controlling power supply from said power supply circuit of the camera to said electric control device of the camera, and wherein said power supply control circuit is adapted to receive power supply from said power supply circuit of the motor drive device upon electric connection of said camera with said motor drive device;

an improvement comprising means for controlling the power supply from the power supply circuit of said motor drive device in synchronization with the control function of said power supply control circuit upon electric connection with said camera.

4,353,634

FOCUSING MECHANISM FOR CAMERA OBJECTIVE

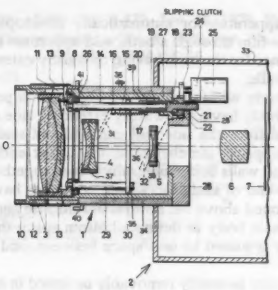
Paul Himmelsbach, Bad Kreuznach, Fed. Rep. of Germany, assignor to Jos. Schneider & Co. Optische Werke Kreuznach, Bad Kreuznach, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,588

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716679

Int. Cl.³ G02B *7/10*; G03B *3/10*

U.S. Cl. 354—195 **8 Claims**



1. In a camera provided with a housing and an objective projecting forwardly from said housing, said objective including a lens barrel centered on an optical axis and a plurality of lenses in said lens barrel, at least one of said lenses being provided with an axially shiftable lens mount,

the combination therewith of:

stationary bearing means in said lens barrel;

a guide rod slidably and nonrotatably held in said bearing means, said guide rod being fastened to said lens mount and extending rearwardly therefrom parallel to said optical axis;

a threaded member forming a coaxial rearward extension of said guide rod nonrotatably held in said housing with freedom of axial displacement, said guide rod and said member being relatively axially shiftable;

a threaded drive element matingly engaging said member, said element being provided with gear teeth and being held against axial displacement in said housing;

a reversible motor provided with a pinion in mesh with said gear teeth;

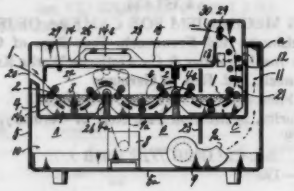
a manually rotatable setting ring carried on said lens barrel in an axially fixed position, said setting ring being provided with a camming groove registering with an axially extending slot in said lens barrel, said lens mount being provided with a projection extending through said slot into engagement with said camming groove; and

biasing means urging said guide rod and said member into a predetermined relative axial position, said camming groove and said slot receiving said projection with sufficient play to enable an axial shift of said lens mount by said motor independently of the position of said setting ring, said lens mount being axially entrainable by said setting ring via said projection against the force of said biasing means.

4,353,635
APPARATUS FOR AUTOMATICALLY DEVELOPING FILM

Hiroshi Tanaka, No. 1029, Asahi-Coop, 13-10, 5-chome, Takadono, Asahi-ku, Osaka-shi, Japan

Filed Jun. 2, 1981, Ser. No. 269,657
Claims priority, application Japan, Jun. 14, 1980, 55/80759; Jun. 18, 1980, 55/85928[U]
Int. Cl.³ G03D 3/08
U.S. Cl. 354—320 2 Claims



1. An apparatus for automatically developing a film by passing the film through a bath, said apparatus comprising:

a container for the bath having upwardly extending side and end walls;

a main body within which said container is positioned, said main body having upwardly extending side and end walls spaced from the side and end walls of said container to define spaces therebetween, the upper ends of said side and end walls being integrally joined together to close the upper end of said spaces; said container having a bottom positioned above the bottom of said side and end walls of said main body to define a bottom space thereunder and which is joined to said space between said side and end walls;

a feed roller assembly removably mounted in said container;

a power transmission assembly in one of said spaces and detachably connected to said feed roller assembly;

a drive motor in one of said spaces connected to said power transmission assembly for driving said power transmission assembly;

said container end wall and side walls having openings therein at the delivery end of said feed roller assembly and opening out of the upper ends of the spaces between said side walls and end walls; and

a drying blower in one of said spaces and having a hot air discharge directed toward said spaces between said container and main body side and end walls for directing hot air upwardly therethrough and out of said openings for drying film being discharged by said feed roller assembly.

4,353,636
DEVICE FOR CLEANING OPTICAL FIBER TUBE INCORPORATED IN IMAGE FORMING APPARATUS

Hiroaki Kojima, Toyokawashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1980, Ser. No. 171,438
Claims priority, application Japan, Sep. 27, 1979, 54-134040[U]
Int. Cl.³ G03B 27/00, 27/52
U.S. Cl. 355—1 9 Claims

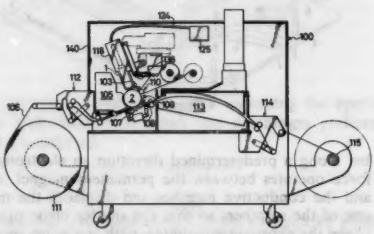
1. In an image-forming apparatus which includes an optical fiber tube for producing an image to be electrostatically copied in the surface of a photoconductive member, the optical fiber tube having a light-emitting surface which is susceptible to becoming dirty, the improvement wherein said image-forming apparatus includes

first moving means connected to said optical fiber tube to position said optical fiber tube either at a first position in close proximity to the surface of said photoconductive member or at a second position located remotely of said surface of said photoconductive member; said optical fiber tube, when at said first position, producing an image to be reproduced on the surface of said photoconductive member from light emitted from said light-emitting surface thereof, and, when in said second position, being capable of having its light-emitting surface cleaned;

cleaning means capable of cleaning the tight-emitting surface of said optical fiber tube when said optical fiber tube is at said second position;

second moving means connected to said cleaning means for moving said cleaning means over said light-emitting surface of said optical fiber tube;

control means for controlling the operation of said first moving means and said second moving means;



a power switch operable to turn on the supply of electrical current to said image-forming apparatus or turnoff the supply of electrical current to said image-forming apparatus;

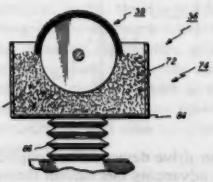
first detection means connected to said control unit for supplying a signal thereto when said optical fiber tube is at said second position;

said control means causing said second moving means to move said cleaning means over said light-emitting surface of said optical fiber tube when said power switch is turned on and said first detection means detects the positioning of said optical fiber tube at said second position.

4,353,637
DEVELOPMENT SYSTEM

Delmer G. Parker, Irondequoit, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1981, Ser. No. 297,586
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 DD 32 Claims



1. An apparatus for developing a latent image including:

means, defining a chamber, for storing a supply of developer material therein;

means, disposed in the chamber of said storing means, for transporting the developer material into contact with the latent image to form a powder image thereof; and

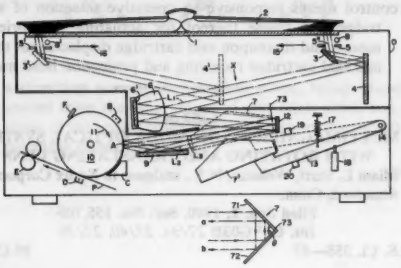
means for automatically moving said storing means toward said transporting means to provide a continuous supply of developer material to said transporting means.

4,353,638

COPYING APPARATUS

Wilhelm Knechtel, Biebertal, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,370
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 6 Claims



1. A copying apparatus comprising:

scanning means for scanning an original to be copied in a first direction or alternatively in a second direction opposite to said first direction;

first reflecting means disposed in a first optical path which the light for forming an image of said original on a photosensitive medium passes through during the original scanning in said first direction;

second reflecting means movable between first and second positions, wherein said second reflecting means when being in the first position during the original scanning in said first direction takes no part in forming the image but during the original scanning in said second direction said second reflecting means is in the second position in which it forms a second optical path different from said first optical path and takes a part in forming the image; and

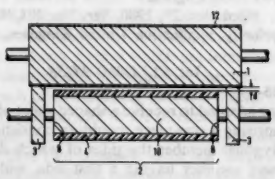
third reflecting means disposed in said second optical path to project the original image on said photosensitive medium during the original scanning in said second direction, wherein said second and third reflecting means cooperate to change the orientation of the original image on said photosensitive medium by 180° relative to that formed during the original scanning in said first direction.

4,353,639

DEVICE FOR REMOVING DEVELOPER LIQUID FROM A RECORDING MATERIAL

Roland Moraw, and Günther Schädlich, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 266,977
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021050
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 14 Claims



1. A device for use in an electrophotographic copying machine to remove developer liquid from a recording material, comprising:

a rotatable drum carrying on its outside circumferential surface the recording material which is intended to be charged and exposed to an optical image of an original in order to produce a latent charge image thereon; and

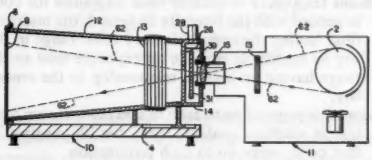
a roller mounted parallel to said drum for rotation in the direction opposite to the direction of movement of the recording material for applying a developer liquid to the latent charge image on said drum, said roller being arranged to provide a gap between the roller and the recording material, and said roller comprising a surface layer of a material having a smaller coefficient of friction than the recording material and a thickness such that the gap between said roller and said recording material on said drum is less than about 0.05 mm.

4,353,640

PRINT MAKER

Arne A. Wyller, Stockholm Observatory, S-133 00 Saltsjöbaden, Sweden

Continuation of Ser. No. 4,437, Jan. 18, 1979, Pat. No. 4,239,376. This application Oct. 8, 1980, Ser. No. 195,123
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—21 8 Claims



1. An apparatus for making prints from transparencies, for use with a stand-alone projector formed by a first housing in which are disposed a light source and a focusable image projection lens defining between them a first optical path, the projection lens being adjustably positionable along the first optical path in a range of positions which lies at least in part outside the first housing, and a transparency holding station disposed in the first optical path, the apparatus comprising:

a second housing, light-tight except for one wall having an opening therethrough;

a conically shaped resilient seal disposed in the opening for receiving the projection lens in light-tight relationship;

a shutter assembly disposed in the housing, adjacent the seal;

a detachable film holder forming at least part of another wall of the housing, the seal, the shutter assembly and the film holder defining a second optical path; and,

adjustable means for orienting the second housing to align the first and second optical paths, whereby the image will be projected onto the film holder without distortion.

4,353,641

COLOR PHOTOGRAPHY PRINT WITH EXPOSURE DATA AND MEANS FOR MAKING

Armando M. Merlo, 1561 Keele St., Toronto, Ontario, Canada (M6N 3G1), assignor to Armando M. Merlo and Angelo Balsamo, both of Toronto, Canada

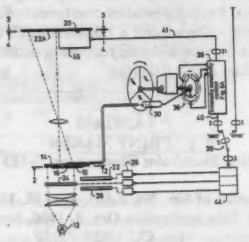
Division of Ser. No. 5,817, Jan. 23, 1979, Pat. No. 4,259,423. This application Apr. 4, 1980, Ser. No. 137,305
Int. Cl.³ G03B *27/80*
U.S. Cl. 355—38 20 Claims

1. Means for preparing color photographic prints using equipment wherein the negative is used to produce a print while illuminated with radiation containing three ranges of color components sufficient to provide the colors required for the printing process and wherein the illumination time of the negative, by light from said radiation within each color com-

ponent range, is terminated by insertion in the illumination path of a filter having an approximately complementary range to the range of the colour component range to be terminated, and wherein means are provided for controlling the time of insertion and the insertion of said filters;

means operable during production of a test print comprising:

means, corresponding to each of said color ranges, and operable during the illumination of said negative, for sensing the intensity of light, within the corresponding color range, transmitted through a small selected area, of said negative,



means responsive to each of such intensities for controlling in accord with the intensity so sensed, the insertion of the filter having the complementary color range to the intensity so sensed, to provide an exposure time to the color range having an inverse relationship to the sensed intensity,

means corresponding to each of said color ranges for recording, in machine readable form, the illumination time for that color range up to such termination.

4,353,642

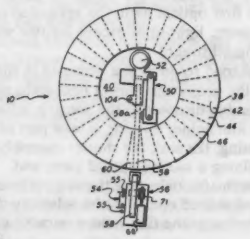
MICROFILM RETRIEVAL SYSTEM

Hans Weigert, 284 Franklin Turnpike, Ridgewood, N.J. 07450

Filed Apr. 23, 1980, Ser. No. 143,162

Int. Cl.³ G03B *21/00*

U.S. Cl. 355—45 **12 Claims**



1. A microfilm cartridge storage drum having a given axis and a plurality of tiers, each of which includes successive side-by-side compartments oriented along radials of said cylinder and adapted to hold a microfilm cartridge;

cartridge receiving means mounted proximate to the said compartments of said drum, and movable axially relative to said drum for receiving a cartridge from one of said compartments in operative opposition thereto, and for optically projecting a selected frame thereof;

cartridge displacement means mounted proximate the compartments of the drum and movable axially parallel to and in conjunction with said cartridge receiving means for displacing a cartridge in operative opposition thereto to said receiving and projection means;

orienting means for providing relative displacement between said drum and each of said receiving and projection head means and said cartridge displacement means, and for providing relative angular displacement of said drum about its axis relative to each of said means to thereby bring each of said receiving and projection head means and said cartridge displacement means in operative opposition to one of said compartments containing a selected cartridge; and

control means responsive to operative selection of a cartridge and frame thereof for actuating said orienting means, and thereupon said cartridge displacement means, and said cartridge receiving and projection head means.

4,353,643

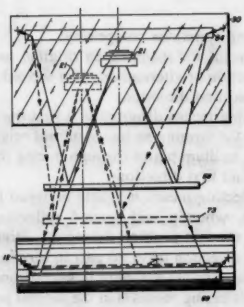
MULTIMAGNIFICATION MODE OPTICAL SYSTEM WITH ROTATING AND TRANSLATING LENS

William L. Statt, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1980, Ser. No. 155,705

Int. Cl.³ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **10 Claims**



1. In a multimagnification mode optical system for projecting an image of an object from an object plane to an image plane including the following disposed along an optical path, support means to support an object at said object plane, a lens at a first position, at least one reflecting surface on each of the object side and image side of said lens and a photosensitive surface at said image plane to receive said projected image, the length of the optical light path from the object plane to the lens relative to the length of the optical light path from the lens to the image plane forming a first image magnification ratio, the improvement including means to simultaneously rotate and translate said lens about and along a stationary axis in three dimensional space to a second position whereby the length of the optical light path from the object to the lens is increased thereby forming a second image magnification ratio and whereby the optical axis of said lens is altered.

4,353,644

FRAMES

Eric Taylor, London, England, assignor to Paterson Products Limited, London, England

Filed Oct. 29, 1980, Ser. No. 201,985

Claims priority, application United Kingdom, Nov. 8, 1979, 7938784

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—72 **4 Claims**

1. A frame adapted to receive a shaped sheet of material, said frame comprising a one-piece moulding consisting of:

(a) a polygonal member the sides of which define an aperture, said member having a first side, and a number of other sides, said other sides having flanged inner edges, wherein the flanges lie substantially on the same plane; and

(b) a substantially flat support plate integrally molded with said polygonal member, and extending from said first side thereof, across the aperture, towards the other sides of said member, the outer edges of said plate, as viewed from

a direction normal to the plate plane, being inwardly spaced from the inner edges of said other sides, and the plane of said plate being displaced a short distance from the plane of said flanges.

4,353,645

NEGATIVE FILM CARRIER

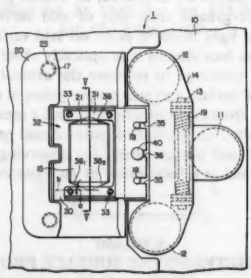
Mikio Kogane, and Seiichi Yamazaki, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 25, 1980, Ser. No. 210,183

Claims priority, application Japan, Dec. 28, 1979, 54/182577[U]

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 5 Claims



1. A negative film carrier for printing pictures comprising: a carrier stand having an abutting and moving drive mechanism adapted to be rocked by solenoid means; a plurality of stationary frames of different image window size, said frames being interchangeably mountable on said carrier stand; a plurality of abutting movable frames provided in correspondence with said plurality of stationary frames which are interchangeably coupled to said abutting and moving drive mechanism, the image window of each of said abutting movable frames having a first two opposed sides parallel to the direction of advancement of a negative film and having a second two opposed sides connecting said first two opposed sides and forming an obtuse angle with ends of said first two opposed sides, said second two sides being symmetrical with respect to the direction of advancement of a negative film.

4,353,646

APPARATUS FOR POSITIONING ORIGINALS IN PHOTOGRAPHIC COPYING MACHINES

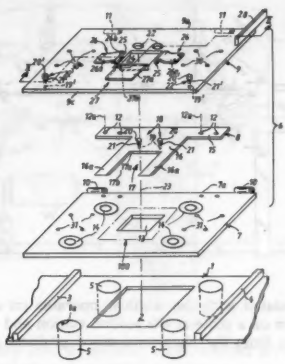
Siegfried Bartel, Gauting; Ernst Biedermann, Taufkirchen; Erich Nagel, Anzing, and Franz Kramer, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,184

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030901

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—76 25 Claims



1. Apparatus for positioning sheet-like commodities, particularly for positioning originals in photographic copiers wherein such originals are normally inserted, shifted and/or removed by hand, comprising a support; and a holder on said support, said holder comprising a first section carried by said support and having a first opening, a second section movable with reference to said first section to and from an operative position in which said second section overlies said first section, said second section having a second opening in register with said first opening in the operative position of said second section, a substantially U-shaped hold-down device interposed between said sections and having an open-sided cutout in register with said first opening, a commodity being insertable between said device and said first section so that a selected portion of such commodity overlies said first opening and three sides of the selected portion are held by said device against said first section, and a biasing element provided on said second section and extending along the open side of said cutout in the operative position of said second section to urge the remaining side of the selected portion of a commodity between said device and said first section against said first section.

4,353,647

APPARATUS FOR EXPOSING AND CONVEYING PHOTOSENSITIVE PLATES

Robert E. Harrell, Manchester; Tedd L. Harrell, Springfield, and Harold E. Coons, Jr., St. Charles, all of Mo., assignors to Western Litho Plate & Supply Company, St. Louis, Mo.

Filed Jan. 8, 1981, Ser. No. 223,317

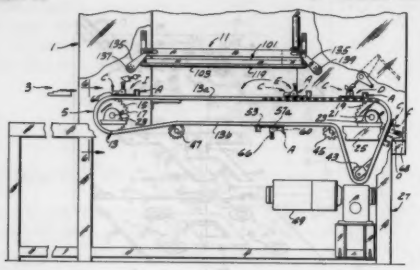
Int. Cl.³ G03B *27/04*

U.S. Cl. 355—85 18 Claims

1. In apparatus for exposing photosensitized plates comprising a conveyor having gripping means spaced at intervals along its length each adapted releasably to grip a plate and a film on the plate for movement of the plate and a film on the plate by the conveyor in a forward direction along a predetermined path, the conveyor being intermittently operable to index each gripping means from a first station for application of a plate and film thereto to a second station along said path for bringing the gripped plate and film to an exposure position and

thence to a third station farther along said path for discharge of the plate, means including a window movable downwardly from a raised retracted position clear of a plate and film in the exposure position at the second station to a lowered position for the pressing of the plate and film, and movable upwardly from its lowered to its raised position, the improvement comprising the provision of:

means for actuating the gripping means on the conveyor at the second station operable to open the gripping means to allow a film on a plate at the second station to be lifted from the plate;



means associated with the window operable on raising it to grip a film on a plate at the second station and lift the said film away from the plate to a raised position clear of the plate;

the means for actuating the gripping means being operable to close the gripping means on a plate at the second station after the said film has been lifted from the plate to enable the conveyor to index the plate to the third station and bring the next plate to the second station for exposure; and

the window then being movable down to its lowered position for the pressing of the said film and the next plate and the exposure of said next plate through said film.

4,353,648

COPY PAPER SEPARATING METHOD FOR USE IN ELECTROPHOTOGRAPHIC COPYING APPARATUS

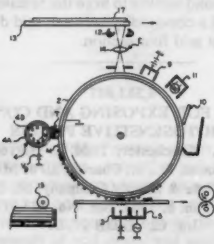
Susumu Tanaka; Tateki Oka, both of Sakai, and Hiroshi Mizuno, Ikoma, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Oct. 21, 1980, Ser. No. 199,220

Claims priority, application Japan, Oct. 23, 1979, 54-136679

Int. Cl.³ G03G *15/06, 13/06*

U.S. Cl. 355—133 **6 Claims**



1. A copy paper separating method for use in an electrophotographic copying apparatus which forms a latent electrostatic image on a recording member, develops the latent image to a toner image, places copy paper over the toner image on the recording member, charges the rear side of the copy paper to a polarity opposite to that of the toner by corona discharge to transfer the toner image from the recording member to the front side of the copy paper, and thereafter separates the copy paper from the recording member, which comprises a step of depositing fine particles having insulating properties charged to a polarity opposite to that of the toner image on the surface of the recording member by a reversal developing process before the copy paper is placed over the recording member to cause the particles to reduce the electrostatic attraction between the copy paper and the recording member when the copy paper is to be separated from the recording member, thereby facilitating separation of the copy paper.

4,353,649

APPARATUS FOR SURFACE STRESS MEASUREMENT OF GLASS COATING AND TRANSPARENT PLASTIC PRODUCT

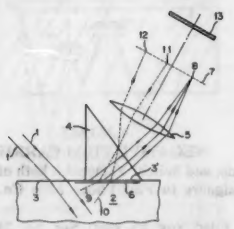
Toru Kishii, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 164,496

Claims priority, application Japan, Jul. 6, 1979, 54-84924; Dec. 10, 1979, 54-159133

Int. Cl.³ G01B *11/18*

U.S. Cl. 356—33 **13 Claims**



1. An apparatus for measuring surface stress of glass coating and transparent plastic products, comprising means for projecting coherent light to provide scattered light in the surface layer of the object to be measured, an output prism having a refractive index greater than that of said surface, mounted proximal to the light incident point on said surface in such a manner that one face thereof is in optically close contact with said surface, a telescope to measure the critical angle at the interface of said surface and said output prism in respect of the projected light from said output prism, and a means, including a polarizer located on the optical path of said projected light downstream of said output prism, for observing interference light spots formed at a focal plane of an objective lens of the telescope.

4,353,650

LASER HETERODYNE SURFACE PROFILER

Gary E. Sommargren, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 159,893

Int. Cl.³ G01B *11/30, 9/02*

U.S. Cl. 356—371 **15 Claims**

1. A method for testing the deviation of the face of an object from a flat smooth surface comprising the steps of

generating a dual frequency beam of coherent light having a stable frequency difference with a constant reference phase,

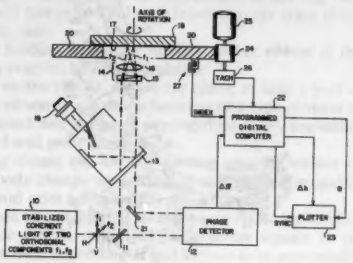
splitting said beam into first and second frequency components,

directing said separating components onto spaced apart points on the face of said object,

recombining said components into a single beam after reflection from said points,

rotating said object about an axis normal to said face with

respect to said first of said split components so as to have said second one of said components reflected from points along a circular track on said face while the first component is continually reflected from a stationary point on said axis at the center of rotation of said object, and



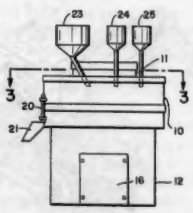
measuring the phase shift of the difference frequency of said components in the recombined beam as a measure of the variation of said face from a flat smooth surface.

4,353,651

METHOD OF MIXING CHEMICALLY BONDED FOUNDRY SAND BY VIBRATORY ACTION

William [illegible] Moore, Whitehall Apts.-6E, Whitehall Rd., Chattanooga, Tenn. 37405, and Donald R. Jorgensen, R.F.D. 1, Udell Ct., Peekskill, N.Y. 10566

Filed Jul. 31, 1980, Ser. No. 173,991
Int. Cl.[3] B28C *5/08*
U.S. Cl. 366—2 4 Claims



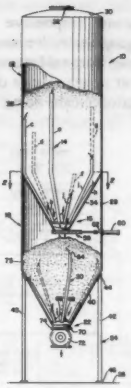
1. A method for mixing foundry sand with two part chemical binders comprising the steps of locating the place of introduction of the first part of the binder in respect to a lengthwise extending mixing trough, locating the place of introduction of the second part of the binder in respect to the mixing trough, introducing the sand into one end of the mixing trough, vibrating the mixing trough causing the sand to turn over, the sand laterally moving in the mixing trough sequentially past the places of introduction of the first part and second part of the binder respectively, introducing the first part and second part of the binder into the mixing trough, said vibrating the mixing trough also mixing the sand and two part chemical binder, and discharging the sand and two part chemical binder mixture from the other end of the mixing trough.

4,353,652

APPARATUS FOR GRAVITY BLENDING OR PARTICULATE SOLIDS

Henry T. Young, 801 Merrill Pl., North Myrtle Beach, S.C. 29582

Filed Apr. 16, 1980, Ser. No. 140,700
Int. Cl.[3] B01F *5/24*
U.S. Cl. 366—193 12 Claims



1. A gravity flow particulate solids blender for blending a mass of heterogeneous material, comprising:

a first storage vessel having a first material receiving inlet and a first material exit port,

a first plurality of particulate solids withdrawal downcomers communicating said first storage vessel with said first material exit port, said first downcomers being of differing lengths and having inlets and outlets spaced, respectively, around the periphery of said first storage vessel and the circumference of said first material exit port,

a second storage vessel positioned downstream of said first storage vessel and having a second inlet communicating with said first material exit port and having a second material exit port,

a second plurality of particulate solids withdrawal downcomers communicating said second storage vessel with said second material exit port, said second downcomers being of differing lengths and having inlets and outlets spaced, respectively, around the periphery of said second storage vessel and the circumference of said second material exit port and

gating means for selectively allowing blended particulate solids to flow from said second material exit port for further processing.

4,353,653

FONT SELECTION AND COMPRESSION FOR PRINTER SUBSYSTEM

Lee T. Zimmerman, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,384
Int. Cl.[3] B41J *5/30*
U.S. Cl. 400—70 7 Claims

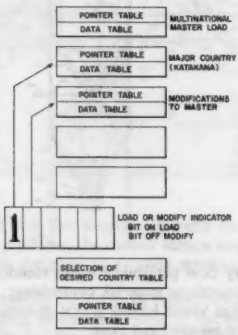
1. A font selection and compression arrangement for a printer subsystem having a printer unit and assemblies for feeding a form and printing character images on said form in a variety of languages during print operations, comprising:

language selection means providing multinational, major, and modifier language selection signals indicative of a plurality of language character images to be printed, said language character images being characterized as multinational, major, and modifier images;

storage means for storing a plurality of image sets in a com-

pressed format for access by said printer subsystem during printing, said storage means storing said language images in the form of a plurality of character image information sets including a multinational master set that is a composite of images used in most of said languages, at least one major country set incorporating images not included in said multinational master set and at least one modifier set including images to be modified in said multinational master set;

font selection means responsive to a multinational signal from said language selection means to select said multinational master set from said storage means for use in developing character image signals during printing operations, said font selection means being further responsive to font



selection signals in real time during printing operations, said font selection means being operable responsive to a major language signal from said language selection means to select said major country set from said storage means to substitute for said multinational master set and operable responsive to a modifier language signal from said language selection means to select said modifier set from said storage means to modify but maintain said multinational master set as the primary source of images; and

image generator means in said printer subsystem operable to utilize said character image sets for producing character image signals in accordance with the language character image set selected and further operable to supply said character image signals to said printer unit for printing of characters required.

4,353,654

DIRECT INK DELIVERY SYSTEM FOR PRINT HEADS UTILIZING ADJUSTABLE MEANS FOR CONTROLLING INK FLOWS

John Shiurila, Londonderry, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

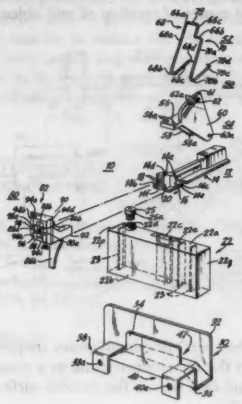
Filed May 16, 1980, Ser. No. 150,319
Int. Cl.³ B41J *27/04, 27/20*
U.S. Cl. 400—124 **28 Claims**

1. Apparatus for direct delivery of ink to a printing member comprising:

a reciprocating member having a printing face at its forward end; an ink supply container;

a first capillary member in said container, at least a portion thereof being immersed in the ink in said container;

a bracket for supporting a second capillary member so that at least a first portion of said second capillary member is positioned to wipingly engage said printing member and a second portion thereof extends into said container and engages said first capillary member;



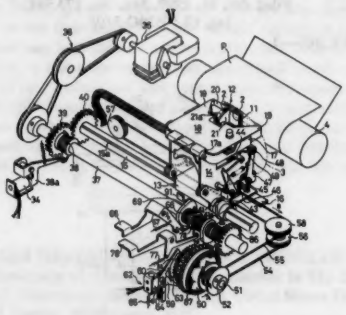
means for moving said first and second capillary members relative to one another for altering the flow of ink therebetween.

4,353,655

ELECTRONIC TYPEWRITER AND ITS CONTROL APPARATUS

Tomoyoshi Watanabe, Chiryu; Takanobu Hirayama, Chita; Motokazu Yoshimura, Nagoya; Kenji Mizuno, Nagoya, and Yukio Inukai, Nagoya, all of Japan, assignors to Brother Industries, Ltd., Nagoya, Japan

Filed Feb. 21, 1979, Ser. No. 13,329
Claims priority, application Japan, Mar. 7, 1978, 53-25856
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **12 Claims**



1. In an electronic typewriter, in combination:

(a) a frame;

(b) a keyboard (25) having a plurality of character keys (26) arranged on said frame;

(c) a platen (4) provided on said frame for supporting and feeding a print paper;

(d) a print head (1) mounted on a base member (13) provided in said frame between said keyboard and platen, said print head including a rotatable print wheel (3) with a plurality of type elements (2) disposed around the periphery thereof and corresponding to each key, a cyclic step motor (5) mounted on said base member and coupled to said print wheel for rotating said print wheel to desired rotational

positions in order to place a selected type element at a printing position adjacent said print paper to be printed thereon, and a print hammer (21) disposed in alignment with said printing position for impacting a selected type element located at said printing position;

(e) moving means (50–65) for incrementally moving said platen and said print head each relative to the other along a printing line;

(f) ribbon holding means for holding an ink ribbon at the printing position before said platen;

(g) lifting means (40–43, 45–49) for lifting at least a part of said ink ribbon to a position between said type element to be impacted and the print paper before every impacting action of said print hammer;

(h) feeding means (40–44) for feeding said ink ribbon to successively change the portion of said ink ribbon against which said print hammer (21) will impact;

(i) electronic circuit lodging means in said frame for holding electronic circuit means which generate signals in response to each depressing of said keys so as to sequentially control each operation of said print head, said moving means, said lifting means and said feeding means respectively so that said step motor is rotated acceleratively from a first rotate position to a position beyond the middle point of the entire rotate cycle step required for locating a selected type element at said printing position and then deceleratively thereafter in said cyclic step so that said step motor rotates a first distance at an accelerating speed and a last distance at a decelerating speed in order to bring the selected type element to said printing position, the electronic circuit means lodged in said frame comprising:

(j) pulse generating means (300) for generating a first pulse (328) to start the rotation of said step motor in response to each depressing of each key;

(k) detecting means (6, 112) for detecting a plurality of rotate positions of said step motor determined at the same interval relative to each type element of said print wheel and generating a position signal corresponding to each of said rotate positions;

(l) pulse signal means (115) for generating an acceleration-deceleration pulse signal (170) in response to said position signal at each rotate position of at least more than half of a cyclic step but less than one step of the rotation before a stable point determined by the energizing state of said step motor;

(m) drive means (216) for driving said step motor according to said first pulse and said acceleration-deceleration pulse signal transmitted from said generating means;

(n) indicating means (290) for indicating the boundary position between the acceleration rotate first distance and deceleration rotate last distance; and,

(o) responsive means (346) responding to said indicating means for suppressing one pulse of said acceleration-deceleration pulse signals to be transmitted to said driving means at said boundry position, so that said step motor in said acceleration rotate first distance is shifted to a next energizing state at the rotate position of the last distance before a stable point determined by each energizing state of said step motor, said step motor in said deceleration rotate last distance being shifted to a next energizing state at the position less than said first distance.

4,353,656

MOVING COIL, MULTIPLE ENERGY PRINT HAMMER SYSTEM INCLUDING A CLOSED LOOP SERVO

Gordon Sohl, Richardson; John R. Masters, Dallas, and John R. Leicht, Bedford, all of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 14, 1980, Ser. No. 196,494
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—157.3 **4 Claims**

1. A printing system having a moving coil hammer for use with an independently operable printing machine having a platen, a print element containing predetermined characters and a carriage for traversing said platen, said print hammer system comprising:

means for creating a permanent magnetic field in the area of said hammer,

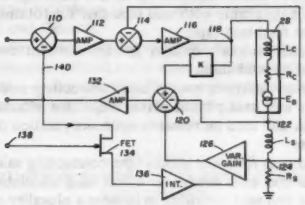
means for generating a velocity command which is the velocity profile for the character to be printed,

means for converting said velocity command into a current,

a coil connected to said hammer and coupled to said current for moving said hammer against and away from said print element,

a resistor in series with said coil for generating a voltage proportional to the voltage dropped by the internal resistance of said coil,

an inductor in series with said coil for generating a voltage proportional to the voltage dropped by the inductance of said coil,



means for determining the velocity of said hammer by calculating all resistance and inductance voltages in the coil circuit and subtracting said voltages from the total voltage applied by said means for converting, the remainder equaling the back emf voltage of the coil which is a voltage proportional to the hammer velocity,

wherein said means for generating is responsive to said hammer velocity voltage determination to generate an updated velocity command, and

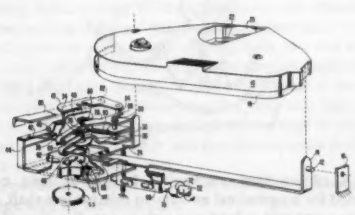
wherein said means for determining further includes a variable gain amplifier to provide compensation for any changes in the resistance of said coil in the moving coil hammer due to changes in the temperature of said coil, thereby allowing the sensed velocity of the moving coil hammer to be independent of any changes in the resistance of the coil in the moving coil hammer.

4,353,657

RIBBON FEED MECHANISM AND CORRECTION TAPE FEED MECHANISM FOR A TYPEWRITER

John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 853,704, Nov. 21, 1977, abandoned. This application Oct. 3, 1979, Ser. No. 81,586
Int. Cl.³ B41J *33/20, 33/24, 29/26, 35/28*
U.S. Cl. 400—208 **4 Claims**



1. A ribbon feed mechanism, in combination with a single

element impact printer having a print line and having a cyclically operable shaft, said printer being cyclically operable in print and correction modes, said mechanism capable of accepting a cartridge containing a printing ribbon and a correction tape, said combination operative to feed said printing ribbon and correction tape in said cartridge, said cartridge comprising superimposed supply spools; and superimposed take up spools having spatially fixed axes with respect to said cartridge, said take up spools respectively for receiving used ribbon and supporting a ribbon disc and for receiving used tape and supporting a tape disc, said ribbon feed mechanism comprising:

a holder for said cartridge mounted on said typewriter for cyclically controlled oscillation of said holder and said cartridge to move said ribbon in a direction substantially perpendicular to said print line;

a ribbon drive wheel insertable into said cartridge and peripherally engageable with said ribbon disc for rotating said ribbon disc to feed said ribbon in feed increments;

a tape drive wheel insertable into said cartridge and peripherally engageable with said tape disc for rotating said tape disc to feed said tape;

a first cam means mounted for intermittent rotation and driven by said shaft;

a first cam follower means interconnecting said first cam means and said ribbon drive wheel for effecting ribbon feed in said feed increments upon the rotation of said cam means;

a second cam follower means interconnecting said first cam means and said holder to effect said oscillation of said holder and said cartridge to present a plurality of levels of said ribbon at a writing line of said printer and to permit depression of said cartridge to a position whereby the ribbon is below the writing line;

a second cam means mounted for intermittent rotation and driven by said shaft;

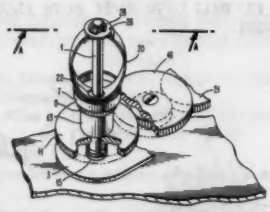
a third cam follower means operatively connected to said tape drive wheel, and mounted for normal disengagement from said second cam means when in said print mode, and oscillatable into engagement with said second cam means by the elevation of said cartridge to effect feed of said correction tape when in said correction mode, whereby said ribbon is fed upon each cyclic operation of said shaft and tape is fed upon each cyclic operation of said shaft when said second cam is engaged by said third cam follower means by said drive wheels onto a fixed axis takeup spool within said oscillatable cartridge.

4,353,658

RIBBON FEED MODE SHIFT MECHANISM

James A. Craft, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,475
Int. Cl.³ B41J *33/22, 33/38*
U.S. Cl. 400—232 **7 Claims**



1. A ribbon feed mechanism having at least one gear mounted for longitudinal movement relative to a shaft, resilient means urging said at least one gear in one direction of longitudinal movement to one gear engagement position, and a leaf spring deformed to apply a force to said at least one gear opposite to the urging of said resilient means, a member stationary relative to said shaft, said leaf spring contacting said member, which member holds said leaf spring to apply the force of said leaf spring to said at least one gear said resilient means having sufficient force to overcome said leaf spring and cause it to bow outward, said leaf spring in said bowed condition being positioned so as to be contacted and deflected to a less bowed condition by a depending member mounted on a ribbon cartridge, the relative strengths of said leaf spring and said resilient means being selected so that when said leaf spring is in said bowed condition, it is displaced by said resilient means and when said leaf spring is in said less bowed condition it exerts a force sufficient to overcome said resilient means, deflection of said leaf spring to said less bowed condition resulting in movement of said at least one gear in the direction opposite said one direction to another gear engagement position.

4,353,659

UMBRELLA LOCKING SLEEVE

Pierre Comte, La Tour du Pin, France, assignor to Societe d'Exploitation Clairitex, Saint Clair de la Tour, France

Filed Jul. 20, 1981, Ser. No. 284,992
Claims priority, application France, Jul. 22, 1980, 80 16395
Int. Cl.³ A47B *37/04*
U.S. Cl. 403—24 **7 Claims**

1. A locking device for the pole of a shade umbrella, parasol or the like adapted to mount the same upon an article of furniture formed with a hole through which the pole can pass with clearance, said device comprising a split tubular body of an outwardly deformable material adapted to be received in said hole, said body being formed with a throughgoing threaded bore extending generally radially but inclined to the axis of said body, and a screw threaded into said bore and having a head rotatable from a location external of said body whereby rotation of said screw engages said screw against said pole and simultaneously expands said body radially to lock said body in said hole and said pole in said body.

4,353,660

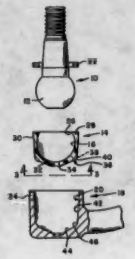
BALL JOINT ASSEMBLY

Kevin Parks, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 2, 1980, Ser. No. 183,653
Int. Cl.³ F16B *3/00*; F16C *11/00*; F16D *1/12*
U.S. Cl. 403—132 **3 Claims**

1. In a ball joint assembly having a socket with an opening leading to an inner surface on the socket, the inner surface having a predetermined contour of varying dimension, a bearing disposed within the opening, the bearing including a substantially spherical cavity leading to an aperture, and a ball stud disposed within the cavity and extending outwardly from the bearing via the aperture, the ball stud being attached to the bearing prior to the attachment of the bearing and ball stud to the socket, the ball stud defining an outer spherical surface substantially identical to the spherical cavity prior to fitting the ball stud in the cavity, and the bearing outer surface having a first portion and a second portion engageably cooperating with complementary portions of said predetermined contour for said socket inner surface, said bearing portions defining dimen-

sions substantially equal to dimensions for said socket inner surface, characterized by said bearing outer surface defining an intermediate portion between said first and second portions and shorter in length than said first and second portions, said intermediate portin engageably cooperating with a complementary section of said socket inner surface and having a dimension greater than the dimension defined by the complementary section of said socket inner surface, said intermediate



portion cooperating with said ball stud and said socket when the bearing and ball stud are fitted into said socket to preload said bearing, and said intermediate portion defining an interference fit with said socket inner surface to provide the majority of preload imparted to said bearing, whereby said bearing is defomed only by said intermediate portion to preload the entire bearing into tight engagement with said socket inner surface and said ball stud.

4,353,661

EXHIBITION/HOUSE FURNITURE AS WELL AS PLAY AND SPORT EQUIPMENT

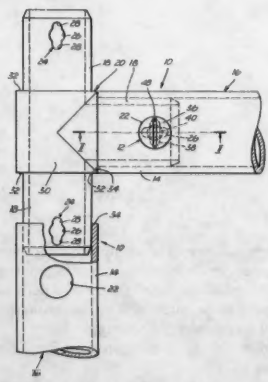
Hubert Rüther, Elbring 25, Seevetal 8 bei Hamburg, Fed. Rep. of Germany (D-2105)

Filed Jun. 29, 1979, Ser. No. 53,601

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 7820267[U]

Int. Cl.³ F16D *1/00*; F16B *7/00*; A44B *17/00*

U.S. Cl. 403—171 **16 Claims**



1. Exhibition/house furniture and play and sport equipment part, comprising

circular-cylindrical connecting pipes and plug connectors, each of the latter having at least two cylindrical connector sockets formed on an attachment part, said connecting pipes and said sockets are circular-cylindrical and form plug units each comprising a plug connection of one of the connector sockets and the end of one of the connecting pipes forming a radially inner part and a radially outer part placed thereon,

said radially outer part is formed with at least one outer wall opening,

said radially inner part is formed with at least one inner wall opening radially alignable with said outer wall opening, said inner opening having a non-circular cross sectional shape,

a toggle is inserted into the radially aligned said openings and turnable therein and constitutes means for locking each said plug unit, said toggle engaging in complementary manner in said aligned openings and frictionally engaging behind an edge of the inner opening in said radially inner part to prevent unintentional turning,

said toggle includes a turning head connected at a radially outer end thereof,

said turning head is disposed in and has a diameter equal to the diameter of said outer opening, said turning head has an inner surface frictionally engaging a peripheral outermost surface of said radially inner part.

4,353,662

CONSTRUCTION SYSTEM FOR RETICULATED STEEL STRUCTURES

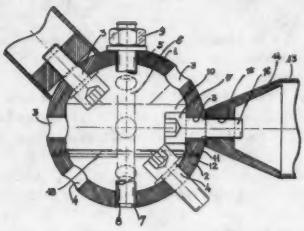
Stephane Du Chateau, 15 Villa des Arts, 75018 Paris, France

Filed Mar. 27, 1980, Ser. No. 134,602

Claims priority, application France, Mar. 27, 1979, 79 07636

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—171 **6 Claims**



1. A spherical connector for a network structure of framework members, comprising,

a hollow spherically shaped main part of dimension greater than a hemisphere,

annular serration profiles provided on the peripheral edge of said main parts,

holes provided through the wall of said main part outside the edge area of said main part, including holes positioned in the plane of a great circle through said main part,

securing bolts passing through said holes and presenting a head portion disposed inside said main part and a threaded body portion projecting from said main part and adapted to coact with an end piece of a framework member,

a closing shell part of reduced size with respect of said main part and forming a sphere together with said main part,

annular serration profiles provided on the edge of said shell part and adapted to fit in said annular serration profiles of the edge of the main part,

holes provided through the wall of said shell part outside the edge area of the shell part,

securing bolts passing through said holes on the shell part and presenting a head portion disposed inside said shell part and a threaded portion projecting from said main part

and adapted to co-act with an end piece of a framework member,

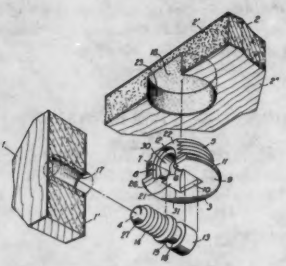
and a bolt passing through and connecting and securing said main part and said shell part in their assembled position, so that said connector presents a spherical shape, ensures an efficacious securing of the framework members particularly in a plane parallel to the connection plane of the two parts of the connector, and ensures a good strength against the traction and compression stresses applied in a plane parallel to said connection plane.

4,353,663

DETACHABLE CONNECTOR FOR STRUCTURAL MEMBERS AND METHOD OF INSTALLATION

Joel I. Glickman, Huntington Valley, Pa., assignor to Conroy, Inc., San Antonio, Tex. and Magic Mold Corporation, Southampton, Pa.

Filed Jun. 3, 1980, Ser. No. 156,101
Int. Cl.³ B25G *3/00*; F16B *7/08, 9/00*
U.S. Cl. 403—230 **14 Claims**



1. A two-piece connector for detachable connection of first and second structural members through abutting surfaces of the members, said connector comprising:

(a) A pin for partial insertion in a bore hole in the first structural member along an axis perpendicular to the abutting surface of the first member, said pin having a head on one end, an insertion shank for insertion in the bore hole in the first member on the other end, and a neck of lesser diameter than the head between the head and the insertion shank; and

(b) a holding piece for insertion in the second structural member along an axis parallel to the abutting surfaces of the structural members in a bore hole in the second member communicating with the abutting surface of the second member, said holding piece having a recess to accept the head and neck of the pin, the walls of said recess defining an arcuate portion comprising a substantially semicircular opening in the holding piece of substantially the same diameter as the neck of the pin with rounded surfaces spaced apart a distance slightly narrower than the neck of the pin to form a constriction at the entrance of the recess to removably capture the neck of the pin.

4,353,664

FREE GUSSET METAL LEDGER HANGER

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

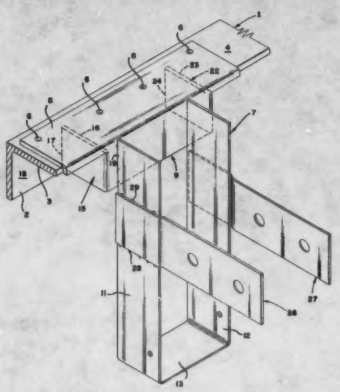
Filed Jul. 24, 1980, Ser. No. 172,002
Int. Cl.³ F16B *5/00*
U.S. Cl. 403—232.1 **6 Claims**

1. A free gusset metal ledger hanger for attachment to a metal ledger 1 wherein the metal ledger includes a lower leg 2 attached to the face of a wall and an outstanding leg 3 having an upper face 4 and a lower face 5, said ledger hanger comprising:

a. a top flange 8 adapted for connection to said upper face 4 of said outstanding ledger leg 3;

b. a depending flange 9 attached to said top flange 8 extending downwardly therefrom;

c. first and second stirrup members 11 and 12 attached to said depending flange 9 extending downwardly therefrom and adapted for holding a structural bean member;



d. a first gusset member 15 operatively and ridgedly connected to said top flange 8 having a top edge 16 in registration with said lower face 5 of said outstanding leg 3 of said ledger and having a side edge 17 in close fitting relation to said outward face 18 of said lower leg 2 of said metal hanger 1; and

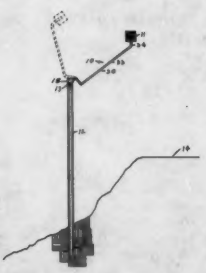
e. said gusset member is an integral part of said depending flange 9.

4,353,665

DELINEATOR

Helen Green, Box 156, Gildford, Mont. 59525

Filed Feb. 25, 1980, Ser. No. 124,447
Int. Cl.³ E01F *9/01*
U.S. Cl. 404—10 **5 Claims**



1. An attachment for an upright highway delineator post having an upper delineator supporting end adapted to project above the ground surface to support a delineator and a bottom end adapted to be anchored to the ground alongside a roadway, said attachment comprising:

a bracket having a mounting surface thereon adapted to engage the post;

a socket on the bracket defining a delineator pivot axis;

mounting means adapted to secure the bracket to the post at a selected elevation adjacent the upper end thereof so the delineator pivot axis is inclined toward the roadway from the post;

an elongated delineator support arm having (a) an inclined inner end received by the socket for pivotal movement about the delineator pivot axis, (b) an intermediate, substantially horizontal portion extending outwardly of the delineator pivot axis, and (c) an outside arm adapted to mount a delineator;

a gravity biased, axial detent means on the support arm inner end and socket for releasably locating the delineator support arm at a prescribed angular position relative to said pivot axis, said detent including mating parts normally held in interlocking engagement by the weight of the support arm and capable of releasing by shifting the arm inner end axially along the delineator pivot axis, in response to lateral forces on the arm in excess of normal wind velocity; and

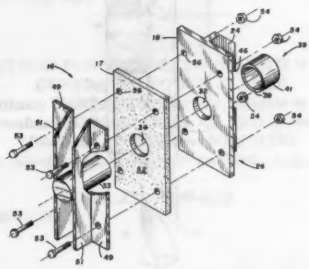
stop means on the bracket extending outwardly into the pivot path of the delineator support arm to engage and prevent undesired pivotal movement of the delineator support arm past said prescribed angular position.

4,353,666

DEVICE FOR TRANSFERRING LOADS BETWEEN ADJOINING CONCRETE SLABS

Reinard W. Brandley, 3855 Oak Vista Way, Loomis, Calif. 95650

Filed Dec. 8, 1980, Ser. No. 214,114
Int. Cl.³ E01C *11/14*
U.S. Cl. 404—60 **10 Claims**



1. Device for transferring vehicle load between a pair of adjoining concrete slabs having a circular in cross-section core hole perpendicular to the slab surfaces and parallel to the joint faces with the core hole axis approximately midway between the joint faces, said device comprising:

a. a rectangular board of premolded compressible filler material positioned vertically substantially on a diameter of the core hole and parallel to the joint faces, said board having its long dimension extending substantially from the bottom of the core hole to the surfaces of the slabs and having a central aperture;

b. a metal plate substantially coextensive in size with said board, said plate covering one side of said board and having a central opening coaxial with said central aperture in said board;

c. a pair of metal angles arranged vertically on the other side of said board with respective flanges in opposed parallel relation and separated a predetermined distance;

d. a right circular cylindrical dowel having a diameter substantially equal to said predetermined distance, said dowel being secured to said flanges in horizontal attitude with one end portion extending through said opening and said aperture to project a given distance beyond said aperture, the axis of said dowel being coincident with the axis of said opening and said opening;

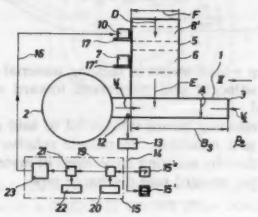
e. cap means covering said one end of said dowel for shielding the surface of said one end portion thereof.

4,353,667

METHOD OF AND APPARATUS FOR MAINTAINING SUBSTANTIALLY CONSTANT A QUANTITY OF OPENED FIBROUS MATERIAL

Gerhard Mandl, Brütten; Robert Moser, Winterthur, and Rudolf Wildbolz, Winterthur, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 497,617, Aug. 15, 1974, abandoned. This application Aug. 26, 1977, Ser. No. 828,037
Claims priority, application Switzerland, Aug. 22, 1973, 12044/73
Int. Cl.³ B65G *53/66*
U.S. Cl. 406—29 **7 Claims**



1. A method for maintaining substantially constant a quantity of opened fibrous material delivered per unit of time, to a spinning preparatory machine, comprising the steps of:

(a) generating a conveying air stream by means of a fan having a characteristic diagram;

(b) flowing the conveying air stream into a transporting duct for the fibrous material;

(c) supplying the fibrous material into the transporting duct in such manner that the material is accelerated by the conveying air stream and a change in the quantity of material accelerated per unit time causes a corresponding change in the operating condition of the fan as represented by said characteristic diagram;

(d) delivering the accelerated fibrous material within the duct in the direction of the spinning preparatory machine;

(e) measuring a parameter which is characteristic for the operating condition of the fan;

(f) comparing the measured parameter with a set value parameter corresponding to a desired operating condition of the fan and hence to a desired quantity of opened fibrous material which is to be delivered per unit of time to the spinning preparatory machine;

(g) upon deviation of the measured parameter from the set value parameter, adjusting the further supply of fibrous material into the transporting duct until re-establishing a supply of fibrous material to said spinning preparatory machine corresponding to the substantially constant quantity of opened fibrous material desired to be delivered to the spinning preparatory machine;

wherein the characteristic parameter which is measured is the drive moment of the fan.

4,353,668

HOPPER BOTTOM UNIT

Arthur I. Anderson, St. Paul, Minn., assignor to North American Car Corporation, Chicago, Ill.

Filed Apr. 29, 1980, Ser. No. 144,850
Int. Cl.³ B65G *53/20, 53/38*
U.S. Cl. 406—90 **25 Claims**

1. A discharge unit for use on hopper cars comprising:

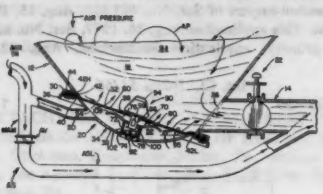
a material discharge pipe connected to a car hopper;

an arcuate body section attached to the bottom of the car hopper to be independent of and spaced from said discharge pipe;

a flexible foraminous membrane mounted on said body section to cover the car hopper bottom, said membrane cov-

ering said body section to define a chamber, said membrane being tilted at an angle with respect to horizontal and sloping toward said discharge pipe;

air induction means connected to said body section to introduce air into said chamber, said air moving from said chamber through said foraminous membrane to form an



air sweep which assists in moving material located in the hopper adjacent said membrane toward said discharge pipe; and

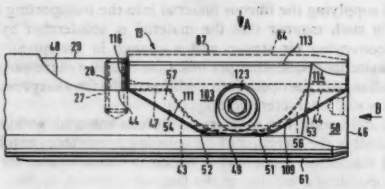
vibration inducing means connected to said membrane for causing said membrane to pulsate relative to said body section, thereby assisting movement of material located in said hopper toward said discharge pipe.

4,353,669

DEVICE FOR MACHINE REAMER

Georg Striegl, Liststr. 29, 7472 Reutlinger, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 174,624
Int. Cl.³ B23B *27/16, 29/02*
U.S. Cl. 408—185 **9 Claims**



1. In a machine reamer having:

a head,

a hard metal cutter knife having two cutting edges, first and second sides between said cutting edges, and a pair of end regions, and

means for adjusting said hard metal cutter knife between first and second positions corresponding to smaller and larger cutting diameters; said means including

a clamping member resting against said first side of said cutter knife and having a bore therein for a shank and a seat,

a recessed bearing plane in said head for absorbing the pressure of said clamping member,

said head having a tapped hole traversing said head and ending in said bearing plane, and a pair of bore holes spaced apart and ending in said bearing plane,

a pair of set screws in said pair of bore holes associated with the end regions of said cutter knife for moving said cutter knife in the direction of increased cutting diameter,

and a clamping screw having a shank which traverses said clamping member bore and is screwed into said tapped hole and a head seated in said seat of said clamping member; the improvement comprising:

a counter clamping member separate from said cutter knife having one side displaceable on said recessed bearing plane in the direction of increased cutting diameter, a straight holding portion with a holding region for supporting said second side of said cutter knife, and a center region with an oblong hole traversed by said shank of said clamping screw which extends longitudinally in the direction of increased cutting diameter,

said hole in said clamping member for said clamping screw being oblong and congruent with said oblong hole in said counter clamping member and said seat in said clamping member for said clamping screw head being an oblong seat,

one of said cutting edges of said cutter knife projecting beyond said holding region of said counter clamping member, in the direction of increased cutting diameter, and

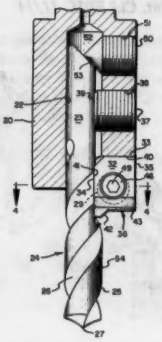
contoured locking means connecting said clamping member with said counter clamping member, said contoured locking means having effective locking surfaces that extend substantially perpendicular to the direction of increased cutting diameter.

4,353,670

MACHINING TOOL

Charles A. Jorgensen, Antioch, Ill., assignor to Everede Tool Company, Chicago, Ill.

Filed Jun. 2, 1980, Ser. No. 155,103
Int. Cl.³ B23B *51/10*
U.S. Cl. 408—193 **16 Claims**



1. A machining tool comprising:

a holder;

an axially adjustable, leading element having a shank and a head portion terminating at a tip;

a hole in said holder, extending along the axis of said holder, and comprising means for receiving the shank of said leading element and for mounting said leading element in axially adjustable relation to said holder;

said hole in the holder comprising means mounting said leading element for rotation about its axis;

a cutting insert having inside and outside surfaces and a plurality of peripheral sides;

a seating surface on said holder for mounting thereon the inside surface of said insert;

a first locating surface on said holder for engaging a first peripheral side of said insert;

a second locating surface on said axially adjustable leading element for engaging a second peripheral side of the insert;

said first and second peripheral sides of the insert being angularly disposed to each other;

said first and second locating surfaces being angularly disposed to each other in the same angular relation as the first and second peripheral sides of said insert;

means for fixing said leading element in a predetermined axial position relative to the holder;

means for fixing said leading element in a predetermined

rotative position in which said second locating surface is positioned to engage the second peripheral side of the insert;

a cutting edge along a third peripheral side of said insert, said third peripheral side being opposite said first peripheral side and extending angularly to said second peripheral side;

an opening extending into said holder from said seating surface thereon;

an opening extending through said insert from its outside to its inside surface and overlying said opening in the seating surface on said holder;

a cam pin extending through said opening in the insert and into said opening in the holder;

means in said openings mounting said cam pin for rotation between a locking position, in which said insert is fixed against movement relative to said holder and said leading element, and an unlocking position in which said cam pin and said insert are removable from said holder;

and means on said cam pin for urging the insert's first peripheral surface toward engagement with said first locating surface and for urging the insert's second peripheral surface toward engagement with said second locating surface, in response to rotation of said cam pin to a locking position;

said cutting edge on the insert extending radially beyond the periphery of said head portion of the leading element when the insert is mounted on the holder;

said cam pin, said openings and said first locating surface comprising means for fixing the position of said cutting edge axially in relation to said holder, and for preventing adjustment in an axial direction of the fixed position of said cutting edge.

4,353,671

METHOD FOR FABRICATING GEARS WITH GENERATED TOOTH FLANKS

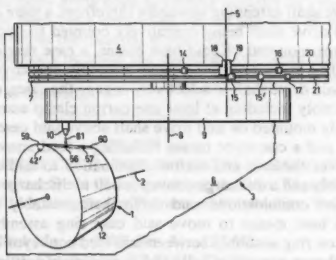
Erich Kotthaus, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Jul. 21, 1980, Ser. No. 170,532

Claims priority, application Switzerland, Aug. 10, 1979, 7346/79

Int. Cl.³ B23F *9/12*

U.S. Cl. 409—26 **3 Claims**



1. A method of fabricating gears having generated tooth flanks by cutting-out tooth slots with at least one face-mill cutter head carrying out a rotational movement about a cutter head axis, comprising the steps of:

providing a face-mill cutter head and a workpiece at which there are to be cut tooth slots;

during a first working step for the purpose of rough cutting the tooth slots carrying out a plunge-cut movement between the face-mill cutter head and the workpiece;

during such plunge-cut movement cutters of the face-mill cutter head initially contacting the workpiece at a predeterminable plunge-cut position between end regions of a tooth slot which is to be fabricated; and

during a further working step for the purpose of finish cutting the tooth slot performing a generating motion between the face-mill cutter head and the workpiece.

4,353,672

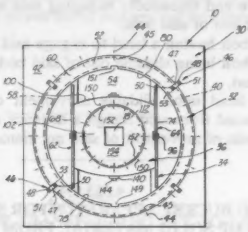
TEMPLATE DEVICE

Gerald T. Smith, 5312 N. Walker, Oklahoma City, Okla. 73118

Filed Jun. 9, 1980, Ser. No. 157,249

Int. Cl.³ B23C *1/16*

U.S. Cl. 409—97 **23 Claims**



1. A template device for guiding a cutting tool in cutting engagement with a surface of a work piece comprising:

a base plate having a base plate opening therein;

a carriage support rotatably supported by the base plate in the base plate opening, the carriage support having a carriage support opening therein;

first locking means for securing the carriage support in a selected fixed position within the base plate opening;

a carriage assembly mounted on the carriage support such that the carriage assembly generally traverses the carriage support opening; and

a template assembly supported by the carriage assembly, comprising:

a template support plate slideably mounted on the carriage assembly such that the template support plate can be moved along the carriage assembly to selectively position the template support plate within the carriage support opening, the template support plate having a template support opening therein; and

a template supported by the template support plate such that the template is selectively rotatable about its central axis, the template having a template opening therein.

4,353,673

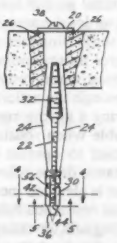
WALL ANCHOR

Joseph Lesowsky, 335 E. Taft Ave., Orange, Calif. 92665

Filed Sep. 11, 1981, Ser. No. 301,240

Int. Cl.³ F16B *13/06*

U.S. Cl. 411—38 **6 Claims**



1. A wall anchor comprising:

a tubular body having a flange at one end,

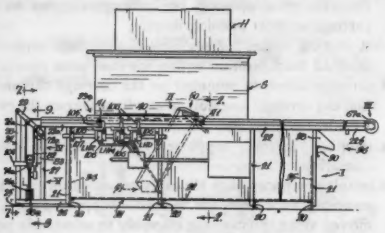
said body having elongated slots therein to provide spaced elongated ribs;
a sleeve extending from the other end of said body;
a nut element coaxial with and located within said sleeve,
said nut element and said sleeve having cooperating means for permitting non-rotative axial sliding movement therebetween;
means within said sleeve to limit movement of said nut element therein;
and a threaded bolt extending through said body and said sleeve and threadedly engaging said nut element on the inner end of said bolt,
said bolt having a head to engage said flange,
said bolt being slidable out of said body by grasping said head,
said head upon slidable movement of said bolt being spaced from said flange a distance determined by the limits of movement of said nut element in said sleeve.

4,353,674

DRAG BUCKET APPARATUS FOR SEPARATING PIECES OF SOLID MATERIAL FROM A LIQUID IN A RECEIVING TANK

Elwood R. Margison, Downers Grove, Ill., assignor to United Conveyor Corporation, Deerfield, Ill.

Filed May 30, 1980, Ser. No. 155,155
Int. Cl.³ B65G *25/08*
U.S. Cl. 414—323 **27 Claims**



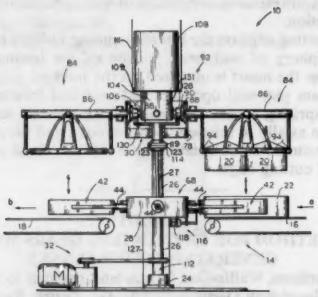
1. Drag bucket apparatus for removing pieces of solid material from the bottom of an elongated, rectangular, liquid filled receiving tank, said apparatus comprising, in combination:
trolley means adapted to move along the longitudinal upper margins of the tank between a start end and a dump end;
drive means for moving said trolley means between said ends in a pickup run and a return run;
a drag bucket in the tank;
supporting means suspending said drag bucket from the trolley means for movement between an initial pickup level near the bottom of the tank and a fully elevated discharge level above the liquid surface level;
drag bucket elevating means for moving the drag bucket between said initial pickup level and said discharge level;
drag bucket pickup level control means operatively associated with said supporting means and said elevating means, said level control means comprising,
means for detecting when resistance to movement of the drag bucket through the material reaches a predetermined high point during a pickup run,
and means operable when resistance reaches said predetermined high point to operate said elevating means only until said resistance drops below said high point, whereby the drag bucket is elevated incrementally during a pickup run to keep said resistance below said high point;
means for operating said elevating means to fully elevate the drag bucket to the discharge level as it nears the dump end;
load release means adjacent the dump end which cooperates with the fully elevated drag bucket to release the entire contents therefrom;
a material support out of the liquid onto which the drag bucket contents drops;
means for starting the trolley driving means and lowering the drag bucket to the initial pickup level to begin a pickup run;
means for stopping the trolley driving means when the drag bucket dumps;
means operable to cause the elevating means to lower the drag bucket to a return level;
and means for operating the trolley driving means to return the trolley means to the start end.

4,353,675

CASE AND CARTON HANDLING DEVICE

George W. Risener, and R. V. Risener, both of 4014 Barcelona St., Tampa, Fla. 33609

Continuation-in-part of Ser. No. 788,152, Apr. 18, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,399
Int. Cl.³ B65B *21/02*; B25J *11/00*
U.S. Cl. 414—403 **16 Claims**



1. A case and carton handling device for the removal of trash and debris from case and carton combination and visual inspection thereof wherein a plurality of cartons is contained within the case, said case and carton handling device comprising a base means having a substantially vertically disposed drive shaft extending upwardly therefrom, a main drive means, said drive shaft being operatively coupled to said main drive means mounted on said base means, a case ring assembly including at least one case clamp assembly operatively mounted on said drive shaft to selectively engage the cases, a carton ring assembly including at least one carton clamp assembly operatively mounted on said drive shaft above said case ring assembly and a conveyor means including a feed conveyor belt to deliver the case and carton combination to said case ring assembly and a discharge conveyor belt to discharge the case and carton combinations, said drive shaft rotatably mounted on said base means to move said case ring assembly and said carton ring assembly between said feed conveyor belt and said discharge conveyor belt, and a case ring positioning means movable between a first and second position to move said case ring assembly upward relative to said carton ring assembly such that when in said first position said case ring assembly engages the case to remove the case from said feed conveyor belt and when in said second position the plurality of cartons is operatively engaged by said carton ring assembly to remove said plurality of cartons from the case, said case means coupling ring assembly to said drive shaft to transport the case from said feed conveyor belt to said discharge conveyor belt in response to rotation of said drive shaft, said case clamp assembly being rotated in the horizontal plane as said drive shaft rotates so that trash and debris contained therein is gravitationally removed therefrom and said carton ring assembly being coupled to said drive shaft to transport the case, from said feed conveyor belt to said discharge conveyor belt as said drive

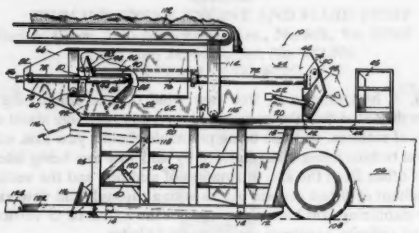
shaft rotates said carton clamp assembly being rotated in the horizontal plane as said drive shaft rotates so that trash and debris contained therein is gravitationally removed therefrom and that as said drive shaft moves said case ring assembly and said carton ring assembly into operative relationship relative to said discharge conveyor belt, said case ring positioning means moves from said first to said second position to return the cartons to the case and to said first position to place the case and carton combinations on said discharge conveyor belt.

4,353,676

BUNKER FOR TUNNEL BORING

Henry V. Mikulich, and Richard P. Lehmann, both of Kingsford, Mich., assignors to Lake Shore, Inc., Iron Mountain, Mich.

Filed Jul. 21, 1980, Ser. No. 170,650
Int. Cl.³ B60P 1/00
U.S. Cl. 414—512 15 Claims



12. A bunker for receiving and storing material for subsequent discharge into a vehicle, comprising,

a framework,

a telescopic body mounted on the framework at a height permitting a vehicle to move under the body, said body having two sections,

the discharge end of said body being closed by a tail gate and provided with means to open the tail gate,

a push plate mounted in the telescopic body for movement with respect to both body sections,

and means for moving the push plate relative to the body to move material towards the discharge end,

the top of the body being open to receive material on either side of the push plate depending on the location of the push plate when the material is received,

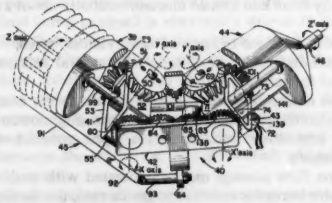
the end of the body opposite the discharge end being open, said push plate being moveable to eject material out of the open end of the body.

4,353,677

WRIST CONSTRUCTION FOR INDUSTRIAL ROBOTS

Kenneth J. Susnjara, Santa Claus, and Mark A. Fleck, Huntingburg, both of Ind., assignors to Thermwood Corporation, Dale, Ind.

Filed Mar. 5, 1980, Ser. No. 127,482
Int. Cl.³ B25J 9/00; F16H 35/18
U.S. Cl. 414—735 36 Claims



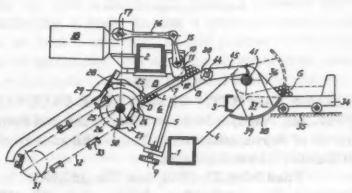
1. A wrist construction for an industrial robot having an arm member comprising a base unit mountable on said arm member, a tool supporting unit, means for pivotally connecting said tool supporting unit to said base unit for movement of said tool supporting unit relative to said base unit about at least a first axis of said base unit, means operatively connected to said tool supporting unit for pivoting said tool supporting unit relative to said base unit about said first axis, and means responsive to the pivotal movement of said tool supporting unit relative to said base unit about said first axis for pivoting said tool supporting unit about a second axis wherein said means for pivoting said tool supporting means about said second axis comprises a gear drive.

4,353,678

MECHANISM FOR TRANSFERRING CUT-TO-LENGTH WIRES OUT OF A LOOSE BUNDLE OF WIRES INTO A SINGLE LAYER OF PARALLEL WIRES

Hans Gött; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H, Graz, Austria

Filed Jan. 30, 1980, Ser. No. 116,914
Claims priority, application Austria, Feb. 6, 1979, 876/79
Int. Cl.³ B21F 23/00
U.S. Cl. 414—748 8 Claims



1. A mechanism for transferring cut-to-length wires out of a loose bundle of wires into a single layer of parallel wires, said mechanism comprising an inclined wire channel, for receiving a single layer of parallel wires, said channel having an upper side and a lower side and the upper end of said lower side extending beyond the upper end of said upper side to form thereby a rest for said loose bundle of wires; at least one wiper-cam, said wiper-cam being positioned above said extended end of said lower side of said channel; and means for pivoting said wiper-cam to and fro in a direction substantially along said channel, said wiper-cam having an end face facing said lower side of said channel, said face being arcuately curved cylindrically about its pivot and spaced from said lower side by a distance such as to allow a single wire to pass therebeneath into said channel.

4,353,679

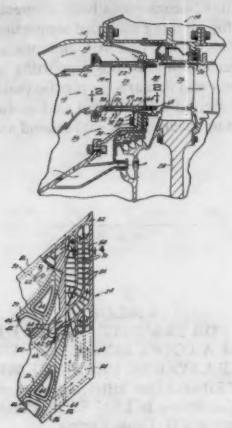
FLUID-COOLED ELEMENT

Ambrose A. Hauser, Wyoming, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 29, 1976, Ser. No. 709,918
Int. Cl.³ F01D 9/02, 5/18
U.S. Cl. 415—115 10 Claims

1. The nozzle band as recited in claim 22 wherein said wall

is segmented into sectors, the circumferential extremities of which are provided with seals to preclude substantial leakage



of cooling fluid from said cooling fluid passage into said hot gas passage.

4,353,680

EXHAUST FAN WITH REMOVABLE FACE COVER

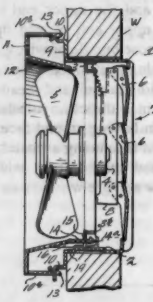
Shunji Hiraoka, Nagoya; Makoto Niwa, Aichi, and Satoru Ishii, Chita, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 27, 1980, Ser. No. 152,981

Claims priority, application Japan, Jun. 19, 1979, 54-83592[U]; Jun. 22, 1979, 54-86285[U]

Int. Cl.³ F04D *29/52*

U.S. Cl. 415—219 R **15 Claims**



1. An exhaust fan comprising:

rotatable fan blades;

drive means for rotating said rotatable fan blades;

a frame for supporting said drive means;

a case for mounting and surrounding at least said frame;

a face cover detachably mounted on said case and including a bellmouth for surrounding said rotatable fan blades;

engaging means mounted on said cover and said case for engagement with each other for limiting of movement of said cover to a predetermined distance.

4,353,681

WIND TURBINE WITH YAW TRIMMING

Glidden S. Doman, Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 19, 1980, Ser. No. 151,016

Int. Cl.³ F03D *7/04*

U.S. Cl. 416—11 **10 Claims**

1. A horizontal axis, free yaw wind turbine comprising a plurality of airfoil blades mounted on a hub rotatable about an axis of rotation, said hub being pivotable about a yaw axis, said wind turbine being characterized by said yaw axis being laterally offset from the axis of rotation of said hub and the vector resultant of thrust on said blades acting through said yaw axis for stabilizing said hub in yaw against the influence of vertical wind velocity gradients acting on said blades.

4,353,682

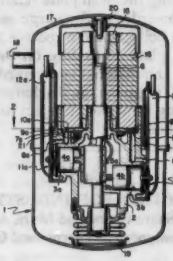
RECIPROCATING GAS COMPRESSOR HAVING SUCTION SHUT-OFF UNLOADING MEANS

Peter J. Linnert, and James R. Quinn, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sep. 22, 1980, Ser. No. 189,485

Int. Cl.³ F04B *49/02, 35/04*

U.S. Cl. 417—295 **18 Claims**



1. A variable capacity reciprocating gas compressor comprising

a. a housing defining a plurality of cylinder bores extending radially from and spaced circumferentially about a central axis;

b. a piston disposed in each of said cylinder bores;

c. a crankshaft extending along said central axis and supported for rotation within said housing;

d. means connecting each of said pistons to the crankshaft such that the pistons undergo reciprocating motion within their respective cylinder bores upon rotation of said crankshaft;

e. suction flow passage means associated with each of said cylinder bores for conveying gas thereto, the suction flow passage means of at least one of said cylinder bores having an inlet spaced radially from said central axis and including a valve seat comprising a generally planar surface

surrounding said inlet and lying in a plane substantially perpendicular to said central axis, and valve plate means associated with each cylinder bore for controlling gas flow with respect thereto;

f. unloader valve means for selectively shutting off gas flow through the suction flow passage means of said at least one cylinder bore and comprising

i. a valve element having a generally flat, planar surface;

ii. means supporting said valve element for movement between a first position wherein its planar surface lies in overlying relationship to the planar surface of said valve seat, whereby gas flow therethrough is prevented; and a second position removed from said valve seat whereby gas flow therethrough is permitted; and

iii. actuator means for moving said valve element between said first and second positions.

4,353,683

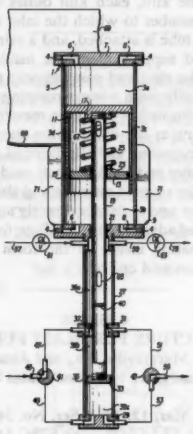
STIRLING CYCLE ENGINE AND FLUID PUMP

Earl A. Clark, 1143 Manchester Ave., Norfolk, Va. 23508

Filed Apr. 21, 1980, Ser. No. 142,556

Int. Cl.³ F04B *17/00*; F02G *1/04*

U.S. Cl. 417—379 **8 Claims**



1. A fluid pump comprising:

a housing enclosing a working volume;

a variable volume displacement means disposed within said housing and dividing said working volume into first, second and third regions, said third region being defined within said variable volume displacement means, and said first and second regions being interconnected so that substantially equal pressures may be maintained between them;

a displacement means drive shaft slidably extending through said housing and attached to said variable volume displacement means, said shaft being hollow and having an opening communicating with said third region whereby a fluid being pumped is alternately driven in first one and then the other direction through said shaft as said variable volume displacement means increases and decreases said third volume;

means defining a pumping chamber, said displacement means drive shaft extending into said pumping chamber and having a second opening therein forming a flow path between the interior of said drive shaft and said pumping chamber;

means for reciprocating said displacement means drive shaft;

inlet means for admitting fluid to said pumping chamber; and,

outlet means permitting egress of fluid from said pumping chamber.

4,353,684

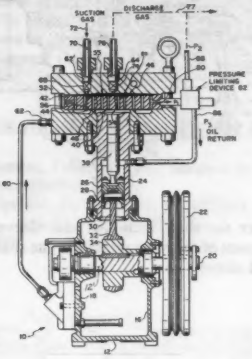
PRESSURE LIMITING DEVICE

Ross D. Christman, Ellicott City, Md., assignor to Superpressure, Inc., Silver Spring, Md.

Filed Sep. 5, 1980, Ser. No. 184,243

Int. Cl.³ F04B *43/06*; F16K *5/00*

U.S. Cl. 417—388 **12 Claims**



1. For use with a diaphragm pump, a pressure limiting device including a body having a pressure control chamber therein, an inlet in said body to said pressure control chamber adapted to be coupled to a working chamber in the diaphragm pump, a first outlet opening from said control chamber, a first poppet valve including a first valve seat at said first outlet opening facing into a larger cross-section first poppet-valve chamber, first poppet in said first poppet-valve chamber engaging said first valve seat, means in said first poppet-valve chamber for urging said first poppet against said first valve seat at a first predetermined force, outlet means from said first poppet-valve chamber adapted to be connected to a sump for the working liquid id, a second outlet opening from said pressure control chamber, a second poppet valve including a second valve seat at said second opening facing into a larger cross-section second poppet-valve chamber, a second poppet in said second poppet-valve chamber engaging at one end thereof said second valve seat, means in said second poppet-valve chamber for urging said second poppet against said second valve seat at a second predetermined force, means for facilitating the application of additional force, directly related to the pressure of the pumped fluid, to the other end of said second poppet, and outlet means from said second poppet-valve chamber adapted to be coupled to the sump for the working liquid.

4,353,685

TURBOCHARGER COMPRESSOR ROTOR RETAINER

Norbert L. Osborn, Irving, and John R. Rae, Dallas, both of Tex., assignors to WRR Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 917,066, Jun. 19, 1978, abandoned. This application Jun. 10, 1980, Ser. No. 158,147

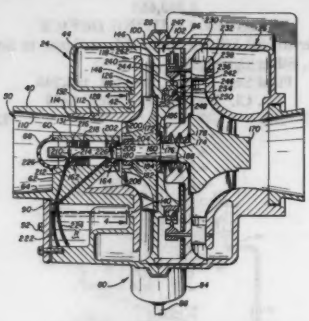
Int. Cl.³ F01D *5/04*; F04B *35/00*

U.S. Cl. 417—406 **14 Claims**

1. In turbomachinery comprising a compressor rotor mounted for rotation on a compressor shaft, a retainer for securing the compressor rotor to the compressor shaft, wherein the compressor rotor has an aperture therethrough for receiving the compressor shaft therein, comprising:

a retaining sleeve having a bore therethrough for mounting said sleeve onto said shaft for abutment against the com-

pressor rotor, said sleeve bore defining an interior surface substantially conforming to and for engaging only said shaft, said bore having a diameter to form an interference



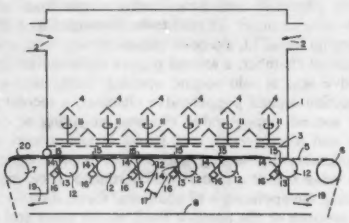
fit over the shaft such that said sleeve alone prevents movement of the rotor relative to the shaft in the direction of said sleeve.

4,353,686

APPARATUS FOR AIR-LAYER FIBROUS WEBS

John F. Hosler, and Paul W. White, both of Cincinnati, Ohio, assignors to Formica Corporation, Wayne, N.J.

Filed Jan. 19, 1981, Ser. No. 226,347
Int. Cl.[3] B29J *1/00*
U.S. Cl. 425—83.1 4 Claims



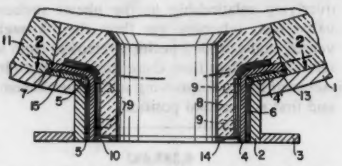
1. In an apparatus for the production of a fibrous webbed product comprising (A) a distributor housing having an inlet and a perforated, bottom wall, (B) a plurality of distributor means within said housing for distributing discrete fibers across said bottom wall, (C) a foraminous forming surface immediately below said bottom wall, (D) a suction box connected with the underside of said foraminous surface and extending substantially along the entire length and width of said permeable bottom-wall and (E) a plurality of rollers positioned under said foraminous surface and within the confines of said suction box, each roller being in substantial contact with said foraminous surface, the improvement which comprises (F) a plurality of damper means positioned within the confines of said suction box each adjacent to one of said plurality of rollers, each of said damper means comprising a blade adapted to contact its adjacent roller and an adjustable bar which functions to modify the space between its roller and its next adjacent member while maintaining the blade in contact with the roller.

4,353,687

ROTARY KILN

Poul W. Nielsen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 30, 1980, Ser. No. 221,517
Claims priority, application United Kingdom, Jan. 2, 1980, 8000095
Int. Cl.[3] F27D *15/02*; F27B *7/00*
U.S. Cl. 432—80 10 Claims



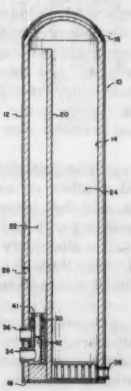
1. A rotary kiln which comprises a plurality of outlet openings for passing material from within the kiln to associated cooler tubes mounted in planetary fashion around the outlet end portion of the kiln, each kiln outlet opening having a tubular support member to which the inlet end portion of the associated cooler tube is attached, and a reinforcing ring positioned within said support members, insulation means positioned between the ring and said support member, said ring being lined internally with a wear-resisting ceramic material, an annular collar formed of the same material as said ring and carried by said ring at the end portion thereof closest to the kiln, said collar extending radially beyond the joint between said support member and the kiln shell, said collar being insulated from both the support member and the kiln shell, means positioned adjacent said collar for directly attaching said collar to the kiln shell and adapted so as to allow for the expansion of said ring, and coating means in the form of wear-resistant ceramic material on said collar.

4,353,688

BAFFLE STRUCTURE FOR BLAST FURNACE STOVE

Walter D. Ahner, Murrysville, Pa., and James B. Malosh, Columbus, Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1981, Ser. No. 243,015
Int. Cl.[3] C21B *9/00*; F28C *3/10*
U.S. Cl. 432—217 9 Claims



1. A hot blast stove including a vertically extending shell divided into a vertically disposed combustion space and a space, parallel to said combustion space, containing refractory

checkerwork, both of which spaces communicating at their upper ends for the flow of fluid through said stove, and a burner compartment substantially coaxially disposed in said combustion space at the lower end thereof, said burner compartment comprising:

(a) an axially elongated flow passage communicating at its upper end with said combustion space;

(b) means for supplying gas to said flow passage adjacent the lower end thereof;

(c) means for supplying combustion air to said flow passage including a plurality of openings defining air ports adjacent the discharge end of said flow passage communicating substantially tangentially therewith; and

(d) means for inducing a swirling motion in the gas flowing through said passage counter to that induced in the combustion air by said tangential air ports, said means including:

(i) a baffle plate disposed transversely of said flow passage intermediate the points of communication of said gas supply means and said combustion air supply means;

(ii) a plurality of through-openings in said plate; and

(iii) means associated with said openings for directing the gas flowing therethrough tangentially in a direction opposite to that induced in the combustion air by said air ports.

4,353,689

HEATING ARRANGEMENT FOR REVOLVING BODIES WHOSE DIAMETER VARIES DURING PRODUCTION THEREOF BY BUILD-UP WELDING

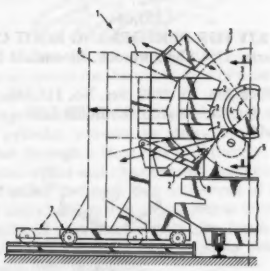
Jose Fernandez; Jürgen Herm; Heinz Krakow; Ernst Wortmann, and Harald Tomsen, all of Hamburg, Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duessoldorf, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,477

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942867

Int. Cl.³ F24J *3/00*

U.S. Cl. 432—225 **2 Claims**



1. Heating apparatus for a revolving workpiece of increasing diameter having a generally cylindrical configuration defining a generally horizontal axis of revolution wherein said workpiece is produced by build up of welding material thereon during a welding process comprising: an assemblage of heating elements located alongside said workpiece and confined to within a geometrical sector bounded by a pair of radii extending through said horizontal axis of revolution perpendicularly thereto; said heating elements being generally arranged to extend in the vicinity of a circular arc of said geometrical sector; said heating elements including a first plurality of heating elements arranged generally centrally of said sector on said circular arc and a second plurality of heating elements divided into two groups each located circumferentially on opposite sides of said first plurality of heating elements; said first and said second plurality of heating elements being movable relative to each other in directions extending radially generally perpendicularly to said horizontal axis of revolution whereby said first plurality of heating elements may be moved closer to said workpiece than said second plurality of heating elements during the initial stages of said build up of welding material when said diameter of said workpiece is relatively smaller; and undercarriage means upon which said first and second plurality of heating elements are mounted for moving said heating elements together relative to said workpiece perpendicularly to said axis of revolution toward and away from said workpiece; said first and second plurality of heating elements being thereby movable relative to each other toward and away from said workpiece to enable control of the heat energy imparted to said workpiece in dependence upon the degree of the increase in the diameter thereof.

4,353,690

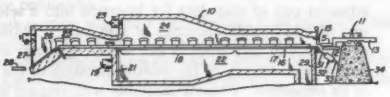
APPARATUS TO ANCHOR SKIDS FOR A REHEAT FURNACE

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., McMurray, Pa.

Filed Jul. 13, 1981, Ser. No. 282,963

Int. Cl.³ F27D *3/02, 3/00*

U.S. Cl. 432—234 **8 Claims**



1. In a reheat furnace for metallic workpieces, apparatus to adjustably anchor a workpiece-support skid to a foundation for resisting longitudinal movement of the skid while workpieces move therealong in the furnace, said apparatus including the combination of:

a housing including side walls engaged with inner and end bearing plates,

rod members each extending from one of the opposite ends of said housing for attachment to said foundation and said skid, one rod member being attached to said housing and the other rod member being longitudinally movable in the housing between the side walls thereof,

bearing flanges joined to the longitudinally-movable rod member in said housing to form first and second spacer cavities with said inner and end bearing plates,

an actuator means in said first cavity for moving the movable rod member in said housing toward the rod member attached thereto, and

rigid spacer means for said second cavity to hold the movable rod member in said housing.

4,353,691

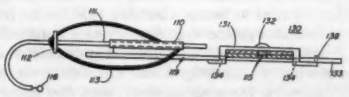
ORTHODONTIC HEADGEAR TRACTION APPLIANCE SYSTEM

John H. Hickham, #5 Chateau Palmer Dr., Kenner, La. 70062

Filed Feb. 27, 1981, Ser. No. 239,003

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—5 **8 Claims**



1. An orthodontic traction appliance system, including headgear having at least two head straps extendable onto both sides of the head of the wearer for wearing by the user, further comprising:

(a) a first "J"-hook tube assembly having a "J"-hook mem-

ber resiliently and elastically carried within a tube, and a first face plate positionable along side the side of the face of the wearer to which said first "J"-hook tube assembly is connected and which is attached to said headgear;

(b) a second "J"-hook assembly having a "J"-hook member resiliently and elastically carried within a tube, and a second face plate positionable along side the opposite side of the face of the wearer to which said second "J"-hook tube assembly is connected and to which is attached to said headgear; each of said face plates, including a variable length portion, each of said variable length portions comprising:

a flat, longitudinally extended base portion, to which the tube of one of the "J"-hook assemblies is fixed, said base, having a series of like female openings through it and spaced along its length;

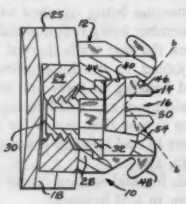
a slideable connector portion, to which the head straps of the headgear are connected, said connector portion riding on said base portion with a top portion over the area of said base portion in which said series of like female openings are located, and said connector portion having spaced lateral slots at both ends through which said base portion extends and said connector portion having a male protrusion extending up from an area adjacent one of said slots for insertion into a selected one of said female openings of said base portion, the availability of said series of like female openings allowing for adjustability of the relative location of the tube of its respective "J"-hook assembly with respect to the straps of the headgear.

4,353,692

ORTHODONTIC APPLIANCE

Stefanos Karrakussoglu, 1313 S. Finley Rd., Lombard, Ill. 60148

Filed Sep. 15, 1980, Ser. No. 187,361
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—16 **6 Claims**



1. An orthodontic bracket comprising

a base adapted for mounting to the labial or buccal side of a patient's tooth against which a force is to be exerted by means of an arch wire;

a holder slideably mounted on the base containing a mesio-distal extending groove of non-circular cross-section which opens through its opposed ends;

a set of interchangeable members each of a cross-sectional shape complementing that of the groove in the holder and each separably insertable into said recess through one open end thereof so as to be non-rotatably held by the holder;

each said interchangeable members having a longitudinal axis and containing an arch wire receiving channel the disposition of which to said longitudinal axis is different from that of the channel in the other members such that the arch wire when received therein enforces a different force vector on the tooth to which the bracket is mounted;

the holder being slideably mounted on the base to adjust the force vector enforced on the tooth by the arch wire; and

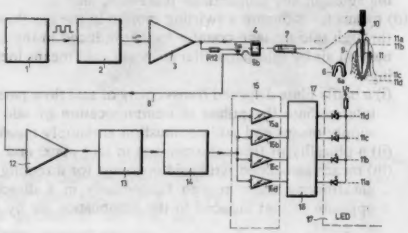
means releaseably locking the holder to the base in an adjusted position on the bracket base.

4,353,693

APPARATUS FOR THE DETERMINATION AND THE DIGITAL DISPLAY OF THE POSITION OF ROOT TREATING MEANS IN THE TOOTH

Tibor Dery, 12, Feherhajo utca, 1052 Budapest, and Attila Madocsay, 5, Tarnok utca, 1014 Budapest, both of Hungary

Filed May 13, 1980, Ser. No. 150,409
Claims priority, application Hungary, May 14, 1979, DE 994
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—27 **4 Claims**



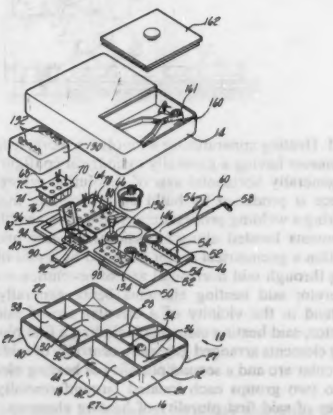
1. Apparatus for the determination and digital display of the position in the tooth channel of root treating means, comprising a saliva suction device, means for sensing the variation of the impedance between the saliva suction device and the root treating means, means for amplifying the variations in said impedance, means for converting said amplified variations into a DC voltage, a plurality of light displays actuated by said DC voltage, and means for varying the intensity of illumination of each of said light displays whereby the intensity of illumination of the most brightly lit said light display and the intensity of illumination of the adjacent said light displays gives a visible indication of the position of the root treating means in the tooth canal.

4,353,694

DENTAL KIT FOR PERFORMING ROOT CANALS

Joseph J. Pelerin, 2756 Shallowbrook, Bloomfield Hills, Mich. 48013

Filed Jan. 25, 1980, Ser. No. 115,346
Int. Cl.³ A61C *3/00*; B65D *1/36*
U.S. Cl. 433—77 **9 Claims**



1. A dental device for containing tools, medicines and supplies for performing root canal therapy comprising:

a housing having a base and a lid, said lid dimensioned to fit over and cover said base,

a plurality of holder assemblies, each holder assembly comprising a body having a plurality of receiving openings formed in it, said receiving openings in each holder assembly being dimensioned to contain a single type of tooth working implement or supply,

said base of said housing including a plurality of openings, each opening dimensioned to receive one holding assembly therein,

said holding assemblies being removably positioned within said openings in said housing base, and wherein said dental device is portable and hand carriable and

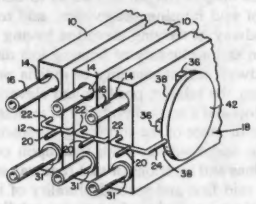
wherein said device further comprises a working well removably mounted to said housing base, said working well having a bottom wall and a closed side wall thus defining an interior chamber open at its top, means for supporting at least one tooth working implement adjacent the top of the working well so that the tooth working implement extends downwardly into the interior of the well, a plate contained within the interior of the well and means for variably adjusting the position of the plate with respct to the bottom wall.

4,353,695

RETRACTION MECHANISM FOR DENTAL UNITS AND THE LIKE

Gerd H. Merkle, Buchenring, Fed. Rep. of Germany, assignor to Sybron Corp.; Rochester, N.Y.

Filed Apr. 21, 1980, Ser. No. 141,792
Int. Cl.³ A01C *1/14*
U.S. Cl. 433—78 **4 Claims**



1. A take up system for the utility lines of a dental unit or the like comprising:

(a) a storage chamber for a utility line, said chamber defining an air cylinder wherein the utility line extends into said chamber through a front end wall thereof;

(b) a piston within said chamber and operatively connected to said utility line such that movement of the utility line out of said chamber moves said piston towards said front end wall and retraction of the utility line is accomplished by pressurizing said chamber to move said piston away from said front end wall;

(c) said chamber having a vent adjacent said front end wall to permit the free exhaust of air from said chamber as withdrawal of the utility line moves said piston towards said front end wall;

(d) a pressure operated valve for sealing said vent including a valve housing fixed to the exterior of a side wall of said chamber about said vent, said housing having a plurality of elongated exhaust ports disposed about its periphery, the total area of said ports being at least substantially equal to the cross sectional area of said vent;

(e) a flexible diaphragm in said valve housing, said diaphragm being normally spaced from said vent so as to define a free air passage between said vent and exhaust ports; and

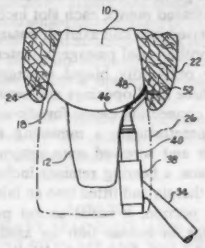
(f) means for introducing fluid under pressure simultaneously into said chamber and valve housing for moving said diaphragm against said side wall to a sealing position over said vent and for pressurizing said chamber to move said piston away from said front end wall.

4,353,696

VIBRATING DENTAL TOOL DEVICE AND METHOD

Byron K. Bridges, 110 Church St., Greer, S.C. 29651

Filed Jul. 10, 1981, Ser. No. 281,984
Int. Cl.³ A61C *3/06*
U.S. Cl. 433—125 **17 Claims**



1. A dental tool device for performing dental crown work on a tooth and improving the sealing and cosmetic appearance thereof which may be utilized with ultrasonic dental apparatus for ultrasonically vibrating said tool device, wherein said tool device comprises:

a shank portion adapted for connection to an operating handle portion of said ultrasonic dental apparatus;

contoured surface means carried by said shank portion having abrasive means carried thereon abrading said tooth during vibration; and

said contoured surface and abrasive means providing means forming a gnereally smooth beveled surface on said tooth;

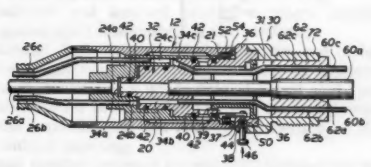
whereby an edge of said surface may be formed to lie below the gum providing a concealed joint between said tooth and crown work and said crown fitting seals solidly on said smooth surface.

4,353,697

DENTAL HANDPIECE AND A CONNECTING MEANS THEREOF

Takasuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Manufacturing Co., Kanuma, Japan

Filed Jul. 16, 1980, Ser. No. 169,320
Claims priority, application Japan, Jan. 21, 1980, 55-6320[U]
Int. Cl.³ A61C *1/08*
U.S. Cl. 433—126 **3 Claims**



1. A dental handpiece comprising: a handle portion and a powerhead assembly which is supported on a top end of said handle portion; a sleeve bearing tightly held into a rear end opening of said handle portion, said sleeve bearing having a fowardly reducing cylindrical internal surface, said cylindrical internal surface including three stepped annular space walls adjacent and perpendicular to circumferential internal regions respectively; a central air supply passage and two passages for exhaust and water axially provided to extend through a substantial length of said sleeve bearing; an air supply pipe inserted into said central air supply passage and two pipes for exhaust and water inserted respectively into two axial passages, a rear internal portion of said sleeve bearing being so shaped as to form a socket for snugly receiving a plug of connecting means; a connecting means to be inserted into said sleeve bearing, a

front portion of said connecting means being so formed into a forwardly reducing cylindrical plug as to fit into said socket of said sleeve bearing, said plug including a central axial straight passage for an air pipe and another straight passage for an exhaust pipe and a forwardly outwardly biased water passage provided from the socket to a rearmost annular space wall, said plug including a plurality of inwardly recessed slots at circumferentially distributed points, each slot including a seal; an air supply pipe inserted into said axial air passage; an exhaust pipe inserted into another axial passage; a water pipe inserted into said forwardly outwardly biased passage; a hollow mount insert having three axial openings and secured into a rear end interior of said connecting means for allowing said three pipes to penetrate therethrough; a mounting nut provided with internal threads and screwed onto external threads on said connecting means; a bearing retainer including a plurality of roller bearings therein and fitted into an inlet peripheral recess of said handle portion; a radial socket provided through a peripheral flange to extend into an axial groove provided through a wall of said plug; a cylindrical casing fixedly set in said radial socket; and a push-pull rod having a head at its outer end and a right angle hook at its inner end held in said casing by a dead spring, whereby the introduction of said hook into said axial groove engaging a front annular wall of said bearing retainer and constant urging of said rod outwardly by said dead spring forms a locking device.

4,353,698

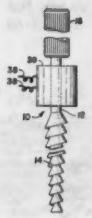
DENTAL TOOL

John T. McSpadden, Johnson City, Tenn., assignor to Inventive Technology International, Inc., Johnson City, Tenn.

Continuation of Ser. No. 105,761, Dec. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,464, Dec. 18, 1978, abandoned. This application Aug. 27, 1981, Ser. No. 297,007

Int. Cl.³ A61C *3/08*

U.S. Cl. 433—164 **1 Claim**



1. A compactor for gutta-percha comprising a bit having a shank portion and a working portion, flute means on said working portion defining a continuous spiral flute having a shoulder facing away from said shank portion and making an angle with the longitudinal axis of said working portion of from about 90° to about 80°, the diameter of said flute means progressively decreasing away from said shank portion to provide a tapered working portion, said continuous spiraled flute making from about 0.5 to about 2.0 spirals per millimeter along the longitudinal axis of said working portion, and said continuous spiral flute having a surface which immediately tapers from the outside diameter of said shoulder of said flute toward the inside diameter of an adjacent shoulder so that there is a minimal peripheral land at the opposite diameter of said continuous spiral flute.

4,353,699

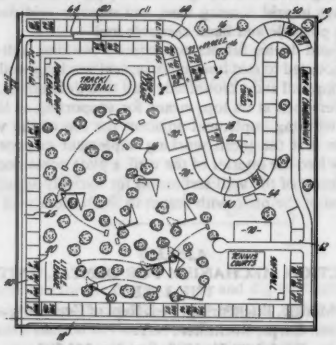
THREE DIMENSIONAL EDUCATIONAL TOY MODEL SUBDIVISION

Burton R. Johnson, 208 Hunsaker La., Eugene, Oreg. 97404

Continuation-in-part of Ser. No. 952,152, Oct. 17, 1978, Pat. No. 4,245,400, which is a continuation-in-part of Ser. No. 409,784, Oct. 26, 1973, abandoned. This application Jun. 16, 1980, Ser. No. 159,500

Int. Cl.³ G09B *25/06*

U.S. Cl. 434—72 **3 Claims**



1. A three dimensional toy for use in teaching the construction and topography of a housing subdivision, said toy comprising a sheet of material formed so as to define a varying topography of said housing subdivision, said topography including a roadway of varying elevation having a plurality of curves therein and a plurality of housing lots disposed alongside said roadway, a first plurality of indicia printed on said sheet indicating the relative position and elevation of each of said housing lots and a second plurality of indicia on said sheet indicating one or more of the surveying parameters of each of said curves in said roadway such that upon comparing the relative positions and locations of said roadway and said building lots with said first and second plurality of indicia, one is instructed in the topography of a housing subdivision, a third plurality of indicia printed on said sheet for identifying the sequential development of said roadway, and a plurality of overlays adapted to be disposed over and secured to said roadway, said overlays having indicia printed there-on corresponding to said third plurality of indicia for indicating the positioning of said overlay on said roadway such that upon comparing said first and second pluralities of indicia with such third plurality of indicia, one is instructed in the construction of a roadway over a varying topography and about a plurality of building lots positioned on said topography.

4,353,700

EDUCATIONAL LEARNING AID

John A. Volakakis, 9810 S. Marion, Oak Lawn, Ill. 60453

Filed Mar. 19, 1981, Ser. No. 245,263

Int. Cl.³ G09B *1/08*

U.S. Cl. 434—168 **5 Claims**

1. An educational aid assembly comprising:
cover means having an upper face,

said face having a plurality of openings therethrough and defining a respective symbol in a predetermined order, said openings adapted to receive a separate piece corresponding to said respective symbols,

a plurality of pieces corresponding to the configuration of said openings for respective insertion therein,

flange means integrally attached to said cover means beneath said face,

said flange means having a downwardly disposed surface arranged immediately adjacent said opening and defining at least a portion of said opening beneath said face,

backing means detachably coupled to said cover means and positioned beneath said plurality of openings,

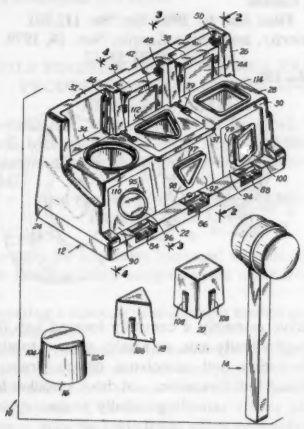
said face is in the form of an elongated surface having an arcuate configuration, and

said backing means includes indicia situated beneath each of said plurality of openings outlining the shape thereof to provide enhanced visualization of said respective symbols.

4,353,701
EDUCATIONAL, ACTION-TYPE, AMUSEMENT CENTER TOY

Sheldon Greenberg, New York, N.Y., assignor to Shelcore, Inc., New York, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,652
Int. Cl.³ A63H *33/00*
U.S. Cl. 434—259 **33 Claims**



1. An educational, action-type, amusement center toy for children, comprising:

(a) a housing;

(b) at least one pop-up member having display means mounted thereon;

(c) means for mounting said one pop-up member and its associated display means on the housing for joint movement along a path between

a hidden position in which the display means is substantially hidden from a child's view, and

a display position in which the display means is visible to the child;

(d) a plurality of different actuator means for moving said one pop-up member, each of said different actuator means being operative for moving said one pop-up member from its hidden position to its display position in response to different manual actions performed by the child;

(e) a common actuator member pivotally mounted on the housing for turning displacement about a pivot axis transversely of said path of said one pop-up member, said common actuator member having a latching element mounted thereon for joint displacement between a latched position in which the latching element extends into said path to retain said one pop-up member in its hidden position, and an unlatched position in which the latching element is located remotely from said path to unlatch said one pop-up member, each actuator means being operatively connected to the latching element for displacing the latching element from its latched position to its unlatched position; and

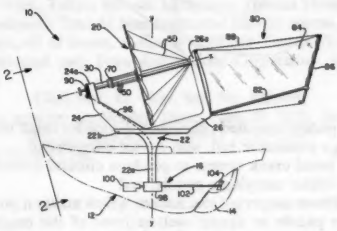
(f) means for constantly urging said common actuator member in a predetermined circumferential direction about the pivot axis, each of said actuator means being operative for moving said common actuator member in the reverse circumferential direction opposite to said predetermined direction,

whereby any one of the plurality of different actuator means can be selected by the child to move said one pop-up member to its display position.

4,353,702
SAILING CRAFT MAINSAIL AND AUXILIARY PROPULSION MEANS THEREFOR

Laszlo Nagy, Barberton, Ohio, assignor to F M Machine Company, Akron, Ohio

Filed Jul. 21, 1980, Ser. No. 170,921
Int. Cl.³ B63H *13/00*
U.S. Cl. 440—8 **20 Claims**



1. A wind-driven, water borne sailing craft comprising in combination:

a flotation hull;

a propeller mounted to move said hull through the water upon being rotated;

means to steer said hull;

a pedestal configured mast vertically mounted on said hull and having a substantially horizontal platform and capable of rotating about a substantially vertical axis;

windward and leeward bracing members mounted in spaced-apart relationship on said platform;

a tubular shaft mounted for axial rotation and carried between said windward and leeward bracing members, said shaft oriented at a windward-to-leeward angle with respect to the pedestal platform, said angle determined by the maximum roll that may be experienced by the hull without capsizing;

a hub member mounted on said shaft between the bracing members to rotate with said shaft, said hub having a plurality of flexible fabric sailblades mounted about its periphery on spars connected into the hub, each of said sailblades extending outwardly from its respective spar by a boom affixed to the spar toward its outer extent;

means associated with said sailblades for changing the orientation of said sailblades about their respective spar in the leewardly direction;

a vertical sail mounted to the pedestal mast and positioned leewardly of the hub member to effect rotation of the mast in response to the direction of the wind so as to automatically maintain the sailblades directed into the wind; and

means intercoupling the tubular shaft at one of its ends to the propeller to drive said propeller into rotation according to the rotational motion of the tubular shaft which in turn is

set into motion by a wind effecting motion of the flexible sailblades, said sailing craft capable of being steered to a desired direction irrespective of the direction from which the wind is blowing.

4,353,703

NAUTICAL PROPULSION DEVICE

Xavier d'Elloy, Les Queras-Audes, 03190 Herisson, France

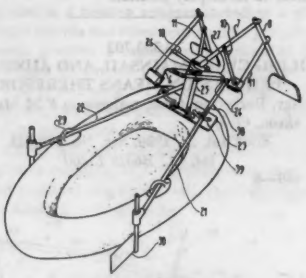
PCT No. PCT/FR80/00064, § 371 Date Dec. 9, 1980, § 102(e) Date Dec. 9, 1980, PCT Pub. No. WO80/02270, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 23, 1980, Ser. No. 220,065

Claims priority, application France, Apr. 25, 1979, 79 10464

Int. Cl.³ B63H *16/12*

U.S. Cl. 440—21 9 Claims



1. A paddle-operated propulsion device for small water craft such as a pneumatic raft, said device comprising:

A. a pedal crank system to produce circular motion;

B. a holder carrying a paddle; and

C. a frame-supported mechanism which makes it possible for the paddle to extend well in front of the crank system while transmitting the circular motion of the crank system to the paddle holder to cause the paddle to undergo translation in a vertical plane whereby the paddle is plunged into the water to propel the craft and then raised thereabove, said mechanism including a bar coupled to the crank system to transmit the motion thereof, one end of the bar being hingedly connected to the end of the paddle holder, first and second connecting rods joined together at a hinged junction point, the end of the first rod being pivotally connected to the bar and the end of the second rod being pivotally connected to the holder to define therewith a deformable quadrilateral structure, said frame being constituted by a pair of bars whose ends are coupled to an articulation shaft, the frame bars being connected at intermediate points thereon to an anchor plate to define an A-shaped structure.

4,353,704

PILOTED FLEXIBLE COUPLING

Dennis J. Corey, Youngsville, Pa., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Mar. 28, 1980, Ser. No. 135,051

Int. Cl.³ F16D *3/78*

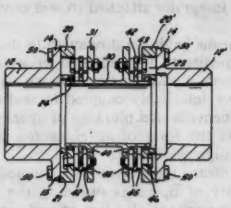
U.S. Cl. 464—72 11 Claims

1. A flexible torque transmission coupling of the type comprising a hub, a center member and a flexing element piloted to said hub by a pilot ring, the improvement comprising:

said hub having a first plurality of circumferentially spaced and axially directed holes and having a second plurality of circumferentially spaced and axially directed holes; said second plurality being tapped and alternately spaced between said first plurality of holes;

said pilot ring having a plurality of circumferentially spaced and axially directed holes circumferentially aligned with the first holes in said hub;

said center member having a plurality of circumferentially spaced and axially directed holes circumferentially aligned with the holes in said pilot ring; and



fastening means engageable with said holes to connect said pilot ring to said hub for assembly of said coupling and to remove said pilot ring from said hub to disassemble said coupling.

4,353,705

SPROCKET AND CLUTCH DRUM ASSEMBLY

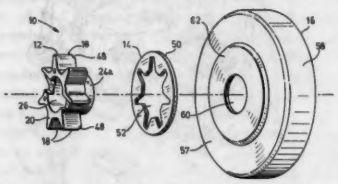
Dennis G. Scott-Jackson, and Hui C. Lim, both of Burnaby, Canada, assignors to Windsor Machine Company Limited, Burnaby, Canada

Filed Jan. 16, 1980, Ser. No. 112,801

Claims priority, application Canada, Nov. 14, 1979, 339815

Int. Cl.³ F16H *55/12*

U.S. Cl. 474—158 5 Claims



1. In a drive assembly a centrally located hub formation having a longitudinally axis, an axially aligned toothed drive sprocket formation and associated clutch drum member mounted on said hub formation, said drive sprocket formation including like axially extending radially projecting teeth, said teeth each presenting at the end thereof adjacent to said clutch drum member substantially co-planar end wall surfaces at right angles to said axis, said clutch drum member including an outwardly radiating wall portion surrounding said hub formation and presenting an uninterrupted substantially planar surface to said co-planar end wall surfaces of said sprocket teeth, an axially extending reinforcing element carried by said toothed drive sprocket formation in the region of said co-planar end wall surfaces thereof, said reinforcing element including an outer marginal portion extending radially beyond and surrounding said sprocket teeth and integral portions projecting radially inwardly into the recesses between said sprocket teeth and in close proximity to the surfaces thereof so as to substantially bridge the separation therebetween, said outer marginal portion and integral inwardly projecting portions likewise presenting substantially co-planar surfaces to said uninterrupted surface of said clutch drum member and in substantial alignment with said co-planar end wall surfaces of said sprocket teeth, and joining means extending between and joining the adjacent and co-planar and uninterrupted surfaces respectively of said reinforcing element, clutch drum member and drive sprocket formation.

4,353,706

PROCESS FOR PRODUCING SCULPTURED PILE FABRIC

Alonzo M. Burns, Jr., Inman, and Woodrow P. Gilbert, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 17, 1980, Ser. No. 141,036
Int. Cl.[3] D06Q *1/02*
U.S. Cl. 8—114.6 15 Claims

1. A process for sculpturing a pile fabric having pile fibers selected from nylon, wool, nylon-wool blends which comprises selectively contacting the pile surface of said pile fabric with from about 150 percent to about 250 percent by weight based upon the weight of said fabric substrate contacted of a fiber degrading agent; said fiber degrading composition comprising from about 20 percent to about 50 percent by weight based upon the weight of said composition of para-toluenesulfonic acid, an aqueous diluent for said para-toluenesulfonic acid and a thickening agent in an amount sufficient to provide a viscosity of from about 100 to about 1,000 cps: heating said pile fabric to a temperature sufficient to cause the tensile strength of said fibers of said pile in the selected areas to be reduced sufficiently so that said fibers may be removed by mechanical means, but said temperature being low enough so as not to result in complete destruction of the pile integrity prior to removal by mechanical means; and removing said degraded portion of said pile fibers by mechanical means to provide a sculptured pile fabric.

4,353,707

TEXTILE FINISHING AGENTS FROM REACTION PRODUCTS OF CARBAMATES AND GLUTARALDEHYDE

John G. Frick, Jr., New Orleans, and Robert J. Harper, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 15, 1981, Ser. No. 302,007
Int. Cl.[3] D06M *13/34*
U.S. Cl. 8—187 3 Claims

1. A process for imparting increased wrinkle-resistance to a cellulosic fabric without using materials made from formaldehyde by:

(a) preparing a reaction product from methyl carbamate and glutaraldehyde;

(b) applying the product in concentrated solution to fabric with an acidic metallic salt catalyst; and

(c) heating the fabric to cause reaction of the product under the influence of the catalyst.

4,353,708

EVALUATION OF THE STATE OF CHANGE OF KERATIN FIBERS

Pierre Bore, Montfermeil, and Arnaud De Labbey, Aulnay-Sous-Bois, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 6, 1979, Ser. No. 55,213
Claims priority, application France, Jul. 13, 1978, 78 20975; Jun. 8, 1979, 79 14791
Int. Cl.[3] G01N *31/00*
U.S. Cl. 23—230 B 21 Claims

1. A process for evaluating the ionic state of keratin fibers with particular respect to the surface thereof, which process comprises:

taking samples having a weight between about 10 mg. and about 50 mg. of fibers from the fibers to be evaluated; then

contacting at a temperature of about normal room or other ambient temperature the said fiber samples with:

a set of at least two solutions of dyestuff, each of which is placed in contact with a sample of the fibers,

one of said two solutions containing at least one acidic dyestuff and being capable of changing its coloration in the presence of fibers in the (+) ionic state, and

the other of said two solutions containing at least one basic dyestuff and being capable of changing its coloration in the presence of fibers in the (−) ionic state,

the pH of the two solutions being such that the initial coloration of each solution remains unchanged in the presence of fibers in the neutral ionic state; and

the solution capable of changing its coloration in the presence of fibers in the (+) ionic state containing two acidic dyestuffs giving different colorations; and

each of said solutions in any given combination set thereof being in volume in a quantity that is between about 0.25 $cm.^3$ and about 1 $cm.^3$ with the dyestuff concentration in each of said solutions being on the order of between about 0.005% by weight and about 0.03% by weight; and thereafter

observing what, if any, change in the color of the solutions has occurred; and finally

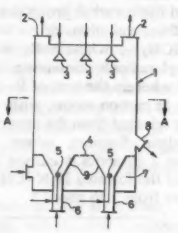
deducing by color comparison the ionic state of at least the surface of said fibers according to the detectable change in coloration of said involved sets of dyestuff solutions.

4,353,709

GRANULATION PROCESS

Susumu Nioh, Tokyo; Hiroshi Hirayama; Tetsuzo Honda, both of Funabashi; Takashi Nagahama, and Masaki Naruo, both of Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Toyo Engineering Corporation, both of, Japan

Filed Nov. 18, 1980, Ser. No. 207,928
Claims priority, application Japan, Nov. 28, 1979, 54-152985
Int. Cl.[3] A01N *25/06;* B01J *2/04, 2/16*
U.S. Cl. 23—313 FB 4 Claims



1. A process for producing substantially spherical granules having a diameter larger than about 2 mm, which comprises the steps of:

(a) dropping as liquid droplets the melt of a substance solidifiable by cooling or drying through a cooling zone having a sufficient height to solidify said liquid droplets, said melt containing up to 40% by weight of water;

(b) countercurrently contacting said liquid droplets with a gas stream for cooling or drying, thereby forming solidified prills having diameter smaller than about 2 mm;

(c) fluidizing said prills with a gas stream at the bottom of said cooling zone to form a fluidized bed;

(d) spraying as fine liquid grains the melt of substance solidifiable by cooling or drying upwardly into said fluidized bed along with a gas stream to form a sprouted bed of said prills in said fluidized bed, while coating and enlarging said prills with said liquid grains, thereby forming granules having a diameter of up to 5 times greater than the diameter of said prills, the weight ratio of the melt dropped as liquid droplets to the melt sprayed as fine liquid grains ranging from 1:4 to 4:1, and

(e) discharging said granules from said fluidized bed.

4,353,710

NOVEL METHOD OF EXTENDING A HYDROCARBON FUEL HEAVIER THAN GASOLINE BY ADDING A METHOXY OR ETHOXY GROUP

William M. Sweeney, Wappingers Falls, and Sheldon Herbstman, Spring Valley, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,033
Int. Cl.³ C10L 1/18
U.S. Cl. 44—56 14 Claims

1. The method of extending a furnace oil which comprises mixing said furnace oil and 2-methoxyethyl acetate, said 2-methoxyethyl acetate being present in amount of about 1 v %–30 v % of total composition—thereby forming a single phase extended furnace oil, which is free of methanol or ethanol; and

recovering said single phase extended furnace oil.

4,353,711

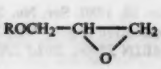
MULTIFUNCTIONAL GASOLINE ADDITIVES

Michael E. Childs, Wilmette, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 161,828, Jun. 23, 1980, Pat. No. 4,295,860. This application Sep. 14, 1981, Ser. No. 301,541
Int. Cl.³ C10L 1/18, 1/22
U.S. Cl. 44—63 4 Claims

1. A composition comprising a major amount of a fuel oil and an additive consisting of from about 10 ppm up to 100 ppm of the reaction product of:

(a) a glycidyl ether represented by the formula



wherein R is either

(i) a saturated hydrocarbyl group possessing from about 6 to about 20 carbon atoms or

(ii) $R_1R_2CHCH_2$—, wherein R_1 and R_2 are saturated hydrocarbyl radicals containing from 1 to 17 carbon atoms and wherein the sum of R_1 and R_2 is from about 4 to about 18 carbon atoms, with

(b) a polyamine selected from the group consisting of unsubstituted alkylene diamines, where the alkylene group contains from 2 to about 8 carbon atoms, and ethylene polyamines of the formula $H_2N(CH_2CH_2NH)_xH$, where x is an integer from 2 to about 8.

4,353,712

START-UP METHOD FOR PARTIAL OXIDATION PROCESS

Charles P. Marion, Mamaroneck; Albert Brent, Huntington, both of N.Y.; George N. Richter, San Marino, Calif.; William B. Crouch, Chappaqua; Edward T. Child, Tarrytown, both of N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 167,876, Jul. 14, 1980, Continuation-in-part of Ser. No. 107,215, Dec. 26, 1979. This application Jun. 10, 1981, Ser. No. 272,416
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R 8 Claims

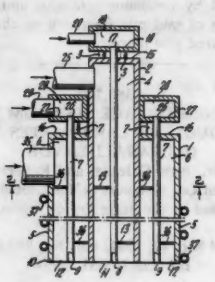
1. A method of starting up and operating a free-flow non-catalytic partial-oxidation gas generator comprising:

(1) passing a stream of preheat fuel comprising fuel gas or liquid hydrocarbon fuel through either the central or annular bunch of tubes of a burner mounted in the upper portion of said gas generator, said burner comprising a central conduit, an outer conduit coaxial and concentric with said central conduit and forming an annular passage along its length, and said central and annular bunches of parallel tubes respectively extending lengthwise in said central conduit and annular passage;

(2) simultaneously passing a stream of air through either the central conduit or annular passage of said burner whichever is associated with the bunch of tubes through which said stream of preheat fuel is flowing, and introducing said stream of air into the interstices between said bunch of tubes; mixing together the said preheat fuel and air to produce a well-distributed blend; and burning the mixture, by substantially complete combustion downstream in the reaction zone of said gas generator at an absolute pressure in the range of about 0.5 to 300 atmospheres; heating the reaction zone to the temperature required for ignition of the autothermal partial oxidation reaction of the principal fuel selected from the group consisting of a pumpable slurry of solid carbonaceous fuel, liquid or gaseous hydrocarbon fuel, and mixtures thereof with a free-oxygen containing gas and with or without a temperature moderator; removing flue gas from the reaction zone; thereafter

(3) passing a stream of said principal fuel through either said central or annular bunch of tubes, whichever is unoccupied, with or without admixture with a temperature moderator;

(4) simultaneously passing a stream of free-oxygen containing gas with or without admixture with a temperature moderator through either the central conduit or annular



passage of said burner whichever is associated with the bunch of tubes through which said stream of principal fuel is flowing, and introducing said stream of free-oxygen containing gas into the interstices between said bunch of tubes;

(5) mixing together said stream of principal fuel and free-oxygen containing gas to produce a well-distributed blend, igniting and burning said mixture by partial oxidation downstream in the reaction zone of said gas generator at an autogenous temperature in the range of about 1700° to 3500° F., a pressure in the range of about 1 to 300 atmospheres, an atomic ratio of oxygen/carbon in the range of about 0.5 to 1.7, and an H_2O/fuel weight ratio in the range of about 0 to 5.0;

(6) completely cutting off the preheat fuel stream in (1) and the associated air stream in (2) after said partial oxidation reaction in (5) commences, or adjusting the flow rates of said preheat fuel stream and associated air stream to provide an atomic ratio O/C in the range of about 0.5 to 1.7 and the partial oxidation of said preheat fuel stream after said partial oxidation reaction commences; and

(7) removing from said reaction zone a raw stream of synthesis gas, fuel gas, or reducing gas.

4,353,713

INTEGRATED GASIFICATION PROCESS

Shang-I Cheng, 17 Woodland Dr., Matawan, N.J. 07747

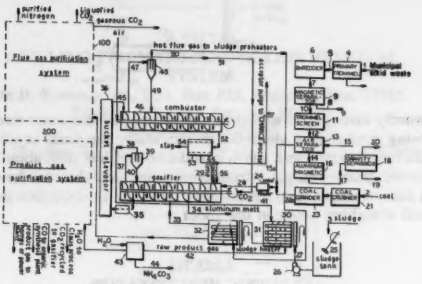
Filed Jul. 28, 1980, Ser. No. 173,169
Int. Cl.³ C10J 3/12
U.S. Cl. 48—202 7 Claims

1. A method of gasifying water and a carbon-containing substance consisting of coal alone or coal together with munic-

ipal waste, sewage sludge or another biomass which comprises the steps of:

(a) pyrolyzing said carbon-containing substance by contacting it with hot CaO in the form of calcined lime or dolomite, thereby producing a solid phase containing CaO, $CaCO_3$ and char, and a gaseous phase containing CO_2, H_2O, CO, H_2 and hydrocarbons;

(b) reacting water from a source other than step (a) with said char in said solid phase in a steam-carbon reaction energetically promoted by concurrently reacting CO_2 with said CaO to form $CaCO_3$ and the heat necessary to drive the steam-carbon reaction, thereby producing a combustible-containing solid residue which also includes $CaCO_3$, and a gas containing CO_2, CO, H_2 and hydrocarbons;



(c) removing CO_2 which remains unreacted with CaO from the gas produced in step (b) and recycling at least a portion of the removed CO_2 back to step (b);

(d) combusting the residue produced in step (b) and transforming the $CaCO_3$ thereof to CaO and carbon dioxide, the steam-carbon reaction of step (b) being controlled so that residual char in said solid residue will upon combustion in step (d) produce sufficient heat to completely decompose the $CaCO_3$;

(e) recycling the CaO from step (d) to step (a);

(f) recovering at least a major portion of the gas from step (c) after removal of CO_2 to form a product gas; and

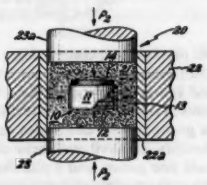
(g) recovering CO_2 from flue gas obtained from step (d) and sending part of it back to step (b).

4,353,714

POLYCRYSTALLINE SILICON-BONDED CUBIC BORON NITRIDE BODY AND METHOD

Minyoung Lee, Schenectady, and Lawrence E. Szala, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1981, Ser. No. 315,332
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—295 **5 Claims**



1. A process for producing a bonded polycrystalline cubic boron nitride body of predetermined shape and size which comprises the steps of:

(a) applying a coating of metal selected from the group consisting of molybdenum and tungsten to a plurality of cubic boron nitride particles covering at least 50 percent of the surface area thereof;

(b) placing a mass of the coated particles in a mold cavity of size and shape corresponding to the size and shape of the desired bonded polycrystalline body;

(c) infiltrating said mass of coated particles in the mold cavity under pressure with molten metal selected from the group consisting of silicon and silicon-base alloy;

(d) cooling the infiltrated mass thereby solidifying the molten metal; and

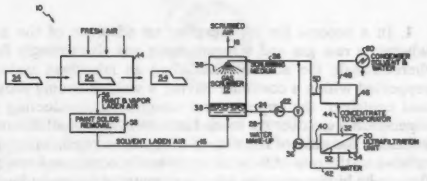
(e) recovering the resulting bonded polycrystalline cubic boron nitride body from the mold.

4,353,715

APPARATUS FOR AND PROCESS OF REMOVAL OF SOLVENT VAPORS

Leon Mir, Newton, and Joseph Zahka, Dracut, both of Mass., assignors to Abcor, Inc., Wilmington, Mass.

Division of Ser. No. 121,638, Feb. 14, 1980, Pat. No. 4,265,642, which is a continuation of Ser. No. 16,419, Mar. 1, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 217,435
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—22 **10 Claims**



1. A process for the removal of a volatile organic solvent from a solvent-laden air stream, which process comprises:

(a) intimately contacting and scrubbing the solvent-laden air stream with an aqueous, multiple-phase scrubbing media to provide a solvent-lean air stream and a solvent-rich scrubbing media, the scrubbing media comprising a surfactant-dispersed, activated carbon or molecular-sieve particles, which particles adsorb the solvent from the solvent-lean air stream, to form a solvent-rich scrubbing media;

(b) discharging the solvent-lean air stream;

(c) concentrating the solvent-rich scrubbing media in a low-pressure ultrafiltration-membrane unit having a feed zone and a permeate zone separated by a membrane which permits the passage of water, but retards the passage of the dispersed activated carbon or molecular-sieve particles of the scrubbing media, to provide a concentrated, solvent-rich scrubbing media in the feed zone and permeate water which passes through the membrane into the permeate zone;

(d) heating the concentrated, solvent-rich scrubbing media to a temperature to remove the solvent from the activated carbon or molecular-sieve particles of the concentrated, solvent-rich scrubbing media, to form a solvent vapor and a concentrated, solvent-lean scrubbing media;

(e) recovering the solvent vapor; and

(f) continuously recycling the concentrated, solvent-lean scrubbing media and the permeate water from the permeate zone for use in the contacting and scrubbing of the solvent-lean air stream, to reconstitute a scrubbing media for use in the contacting and scrubbing steps,

whereby the volatile organic solvent is condensed, a solvent-lean air stream is discharged and the multiple-phase scrubbing media is continuously recycled and reused in removing the solvent from the solvent-laden air stream.

4,353,716

PROCESS AND APPARATUS FOR THE REGENERATION OF AN ADSORBER

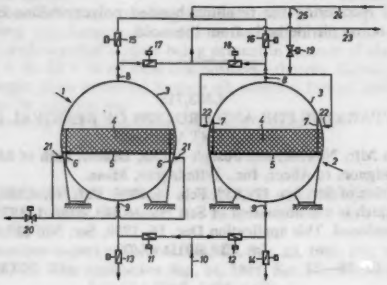
Wilhelm Rohde, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 12, 1981, Ser. No. 292,116

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030474

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—59 12 Claims



1. In a process for regenerating an adsorber of the type wherein a raw gas and a regenerating gas alternatingly flow therethrough, the adsorber including an adsorbent material supported within a container having a wall extending around said container, the improvement comprising: conducting the regenerating gas over the loaded adsorbent and simultaneously adjusting the ratio of the rate of flow of the regenerating gas relative to the rate of flow of a previously conducted raw gas flow to be higher over the adsorbent material located adjacent said container wall than the defined ratio of the rate of flow over the remaining adsorbent material in the container.

8. In an adsorber for conducting a process wherein a raw gas and a regenerating gas alternatingly flow therethrough, the adsorber including an adsorbent arranged in a container having a wall extending around said container, and having primary feeding means and primary discharge means connected thereto for feeding and discharging raw gas and regenerating gas, the improvement comprising:

bulkhead means located adjacent said container wall for separating a portion of the adsorbent material adjacent said container wall from the remaining adsorbent material in said container, said bulkhead means being open on one side in the direction of flow of the gases and almost entirely closed on the other side thereof; and

secondary feeding means or secondary discharge means associated with the space defined by said bulkhead means for independently respectively feeding regenerating gas to, or discharging regenerating gas from, the portion of adsorbent material in said space defined by said bulkhead means.

4,353,717

PROCESS FOR ABSORBING OZONE

Peter Herbrechtsmeier, Hofheim am Taunus; Günter Greiner; Wolfgang Grünbein, both of Liederbach; Norbert Nix, Hofheim am Taunus; Hans Schäfer, Bad Soden am Taunus, and Wolfgang Wendel, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

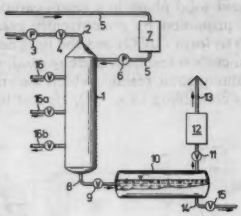
Filed Mar. 24, 1981, Ser. No. 247,009

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011615

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—68 2 Claims

1. A process for absorbing ozone in water by introducing an ozone-containing gas into a water current streaming downwardly in a cylindrical absorber, which comprises introducing the ozone-containing gas into the stream of water in the form of bubbles at the upper end of the absorber and passing the gas bubbles downwardly to an absorber outlet, said ozone-containing gas being introduced into the water stream at a rate independent of the velocity of the water stream flowing down-



wardly through the absorber, the velocity of the water stream being greater than about 0.6 m/sec. above the point at which the ozone-containing gas is introduced and less than about 0.6 m/sec. below said gas introduction point, said absorber having a conical shape immediately above said gas introduction point and absorbing ozone in the water.

4,353,718

ELECTRIC PRECIPITATOR

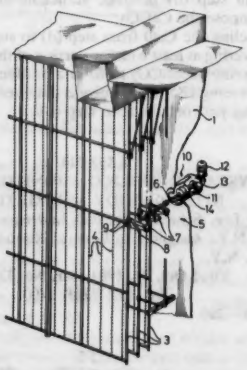
Rudolf Franzen; Peter Klingberg, both of Cologne, and Michael Zeug, Lohmar, all of Fed. Rep. of Germany, assignors to Buckau-Walther AG, Grevenbroich, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 323,909

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1980, 3044053

Int. Cl.³ B03C *3/76*

U.S. Cl. 55—112 8 Claims



1. An electric precipitator, comprising a housing; a plurality of collecting electrodes arranged in said housing; a plurality of voltage-supplied spark electrodes arranged between said collecting electrodes in said housing; a knocking device for cleaning at least one group of said electrodes, said knocking device including a plurality of anvil members connected with said electrodes of said one group, and a plurality of hammer members arranged to strike against said anvil membersand mounted on a rotary knocking shaft; means for driving in rotation said knocking shaft of said knocking device and including a driving shaft; and means for connecting said driving shaft of said driving means with said knocking shaft of said knocking device, said connecting means including two engaging members each connected with a respective one of said shafts, and an insulating coupling extending through said housing and connecting

said engaging members with one another, said insulating coupling including two drive bushes each connected with a respective one of said engaging members, and an intermediate coupling member connecting said drive bushes with one another, each of said drive bushes having a first end portion facing toward said intermediate cupling member and a second end portion facing toward a respective one of said engaging members, said second end portion of each of said drive bushes having a polygonal receiving opening with rounded corners and concave connecting lines between said rounded corners, and each of said engaging members having an outer surface having a shape corresponding to the shape of said receiving opening with a small play and engaging into said receiving opening.

4,353,719

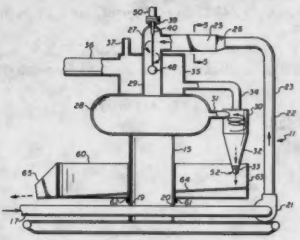
DRILLING FLUID GAS AND SOLIDS REMOVAL SYSTEM

Alvin B. Kennedy, Jr., P.O. Box 822, Angleton, Tex. 77511

Filed Jan. 9, 1981, Ser. No. 223,787

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—170 **20 Claims**



1. A system for removing gas and drilled solids from drilling fluid, which comprises:

a pedestal;

a pressure vessel supported by said pedestal, said pressure vessel including a cylindrical degassing neck;

means for maintaining a pressure greater than atmospheric pressure in said pressure vessel;

a conduit connected tangentially to said degassing neck;

means for pumping drilling fluid through said conduit to flow tangentially about said degassing neck and into said pressure vessel;

a plurality of hydrocyclones connected to said pressure vessel to remove drilled solids from said drilling fluid;

and means for collecting clean drilling fluid discharged from said hydrocyclones.

4,353,720

CONTACT COMPARTMENT FOR REMOVING NOXIOUS GASEOUS COMPONENTS FROM A GAS STREAM

Adolf Margraf, Am Schleplingsbach 46, 3060 Stadthagen, Fed. Rep. of Germany

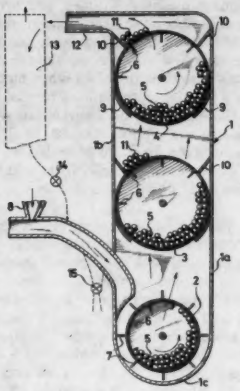
Filed Jan. 7, 1981, Ser. No. 222,976

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001525

Int. Cl.³ B01D *53/14, 50/00*

U.S. Cl. 55—262 **6 Claims**

1. In a contact compartment having an upright fluid-bed chamber provided with an inlet opening at the lower portion thereof and an outlet opening at the top portion thereof and in which a turbulence material comprising solid substances adapted to form absorptive bonds with noxious gaseous components, and a turbulence carrier comprising gases having noxious components, are intermixed in a turbulent whirling manner to form absorption compounds therefrom, said turbulence solid substances and gases being fed via the inlet opening into the lower portion of said chamber for upward flow to the top portion and outlet opening of said chamber, the improvement which comprises said upright fluid-bed chamber comprising a rectangular cross-section, means for intermixing said turbulence solid substances and gases and forming absorptive bonds therebetween, which means is disposed at the lower portion of said chamber for contacting said turbulence solid substances and gases fed via the inlet opening into said chamber, at least one rotating sieve drum provided internally with axially parallel peripherally distributed entraining bars and which is positioned in said chamber above said intermixing means, and a plurality of loose spheriod-shaped bodies movably disposed inside said at least one drum, so as to interrupt the upward flow of said intermixed and absorptively bonded solid substances and gases toward the outlet opening of said chamber, and to form a homogeneous turbulent layer thereof.



4,353,721

EXHAUST SYSTEM FOR REMOVING AIRBORNE PARTICLES FROM THE VICINITY OF TEXTILE MACHINERY

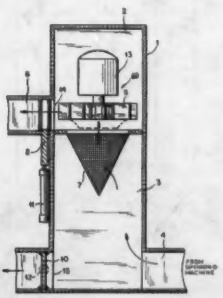
Walter Mollstätter, Pfreimd, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,631

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017838

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—283 **4 Claims**



1. In a system for removing airborne particles from the

vicinity of textile machinery, with a plurality of filter boxes each divided by a screen into a first compartment and a second compartment, each filter box being provided with an intake duct for unfiltered air permanently opening into said first compartment, a normally open discharge duct for filtered air extending from said second compartment, blower means adjacent said screen operable to generate an air flow from said first compartment through said screen and said second compartment into said discharge duct, a suction duct communicating with said first compartment at a location remote from said intake duct, first shutter means positioned and arranged to block said discharge duct, second shutter means positioned and arranged to normally block said suction duct, and operating means coupled with said first and second shutter means for intermittently unblocking said suction duct while blocking said discharge duct during a regenerating phase to enable the extraction of particles accumulating on a surface of said screen facing said first compartment, the suction ducts of all said filter boxes opening into a common manifold provided with exhaust means for drawing accumulated particles from said first compartment of any filter box whose suction duct has been unblocked,

the improvement wherein said operating means comprises a first actuator coupled with said first shutter means, a second actuator coupled with said second shutter means, and control means coupled with said actuators for displacing said first and second shutter means at different instants so as to initiate said regenerating phase by moving said first shutter means into a blocking position after moving said second shutter means into an unblocking position and to terminate said regenerating phase by moving said second shutter means into a blocking position after moving said first shutter means into an unblocking position whereby air is continuously aspirated through said intake duct into said first compartment.

4,353,722

GRANULAR BED FILTER DEVICE INCLUDING A REGENERATIVE GRANULAR BED CLEANING APPARATUS

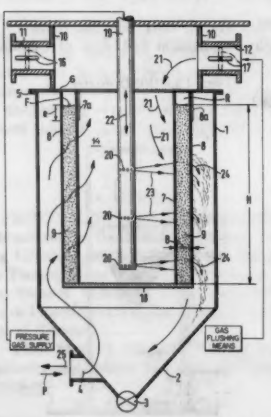
Wolfgang Berz, Westmount, Canada, assignor to Gimag Aktiengesellschaft, Switzerland

Filed Apr. 2, 1980, Ser. No. 136,613

Claims priority, application Switzerland, Apr. 3, 1979, 3092/79; May 29, 1979, 5007/79

Int. Cl.³ B01D *46/30*

U.S. Cl. 55—294 **14 Claims**



1. A filter apparatus having regenerative filter cleaning means comprising:

(a) a filter bed device including a granular filter bed vertically disposed between two laterally spaced walls located inside a gas-tight housing having a raw gas inlet and a clean gas outlet,

(b) the two spaced walls are gas-permeable over a large part of their total area and the ratio (H/B) of the height to the width of the granular filter bed is greater than 1,

(c) the granular filter bed projects upwardly, above the gas-permeable walls, into a bed expansion region defined by gas-impermeable wall sections, said filter bed being completely enclosed by the gas-permeable walls, and

(d) the cleaning means including a tube connected to a source of pressure gas and is movably disposed outside the granular filter bed and adjacent said gas-permeable walls in the region of the filter bed,

(e) said tube including a plurality of outlet nozzles for directing pressure gas through the spaced walls and filter bed to cause fluidization of the granular filter bed.

4,353,723

PLEATED FILTER PACK AND METHOD OF MAKING SAME

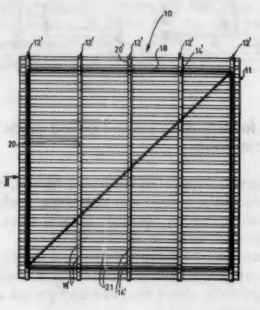
Rainer Schulz, Eichenstrasse 1, 5820 Gevelsberg, and Wilfried Schulz, Oststr. 49, 4322 Sprockhövel, both of Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,289

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003409

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—521 **3 Claims**



1. A filter pack for the purification of gaseous fluids, comprising an undulating sheet of porous material overlain on at least one side by a set of parallel, spaced-apart retaining strips folded into a series of integrally interconnected U-shaped pleats embracing respective undulations of said sheet, said sheet and said strips each consisting of a fleece of elastic fibers of heat-fusible thermoplastic material, adjacent pleats having closely juxtaposed legs thermally bonded to each other and to said sheet only at contact points of their respective fibers between undulations of said sheet.

4,353,724

METHOD FOR FORMING MINERAL FIBERS

Robert L. Houston, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

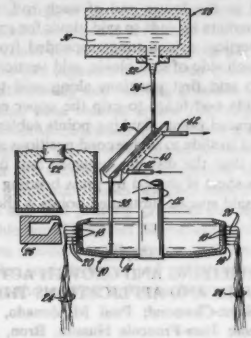
Filed Apr. 6, 1981, Ser. No. 251,590

Int. Cl.³ C03B *37/04*

U.S. Cl. 65—8 **7 Claims**

1. In a method of fiberizing molten mineral material of the type in which molten mineral material is supplied to a spinner and caused to flow outwardly to the spinner peripheral wall, from which the molten mineral material is centrifuged into mineral fibers, the improvement comprising supplying the molten mineral material to said spinner at a temperature above

the liquidus temperature, and cooling the molten mineral material to a temperature below the liquidus temperature before the



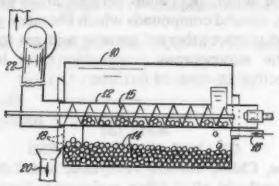
molten mineral material is discharged from said spinner peripheral wall.

4,353,725

PROCESS AND APPARATUS FOR RECYCLING SCRAP GLASS

Charles M. Hohman, and William L. Streicher, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,537
Int. Cl.[3] C03B 3/00
U.S. Cl. 65—27 7 Claims



1. A process for producing glass by charging to a melting furnace and melting therein a glass batch, including the steps of simultaneously,

(1) providing a double shell apparatus comprising an inner shell and an outer shell having an annulus therebetween wherein the inner shell has an aperture therethrough,
(2) charging heat transfer media to one end of the aperture,
(3) charging heated gases to the other end of the aperture,
(4) moving the media and gases past each other in the aperture to heat the media,
(5) removing heated media from the hot end of the aperture and charging it to the hot end of the annulus,
(6) charging scrap glass to the hot end of the annulus,
(7) moving scrap glass and hot media in the same direction through the annulus to remove organic binders or sizes from the scrap glass while simultaneously heating the scrap glass,
(8) removing the cleaned, heated scrap glass from the cold end of the annulus and feeding it to a glass melting furnace, and
(9) recycling the cooled media from the cold end of the annulus to the cold end of the aperture.

6. A double shell apparatus for recycling scrap glass comprising:

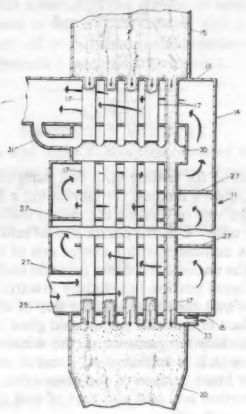
(a) an inner shell and an outer shell having an annulus therebetween wherein the inner shell has an aperture therethrough,
(b) means for charging heat transfer media to one end of the aperture,
(c) means for charging heated gases to the other end of the aperture,
(d) means for moving the media and gases past each other in the aperture,
(e) means for removing heated media from the hot end of the aperture and charging it to the hot end of the annulus,
(f) means for charging scrap glass to the hot end of the annulus,
(g) means for moving the scrap glass and media through the annulus,
(h) means for removing the scrap glass from the cold end of the annulus and feeding it to a glass melting furnace, and
(i) means for recycling the media from the cold end of the annulus to the cold end of the aperture.

4,353,726

METHOD AND APPARATUS FOR PREHEATING PULVEROUS MATERIALS PRIOR TO THEIR INTRODUCTION INTO A MELTING FURNACE

Robert R. Rough, Sr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 17, 1981, Ser. No. 255,006
Int. Cl.[3] C03B 3/00
U.S. Cl. 65—27 18 Claims



1. The process of preheating glass batch prior to its delivery to a glass melting furnace comprising the steps of introducing the fully-intermixed, moisture-containing, glass batch constituents into the upper region of a tubular heat exchanger, allowing the glass batch to flow downwardly by gravity through a plurality of interrupted lengthy open-ended tubes of said heat exchanger, said tubes being interrupted within an enclosed exhaust chamber located within an upper region of said heat exchanger, passing hot gases upwardly through said heat exchanger around said open-ended tubes and said exhaust chamber to heat the glass batch contained therein by countercurrent indirect heat transfer, venting the contained moisture from within said glass batch during its passage through said exhaust chamber, and delivering the essentially moisture-free heated glass batch from the bottom of said heat exchanger into the glass melting furnace.

11. Combined apparatus for preheating glass furnace batch comprising an elongated vertically-mounted heat-exchanger having a plurality of interrupted lengthy open-ended tubes extending vertically throughout a major central portion of its height, means for delivering glass batch in fully-intermixed moisture-containing condition to an upper region of said heat-exchanger for its passage by gravity through said open-ended tubes, an exhaust chamber disposed in an upper region of said

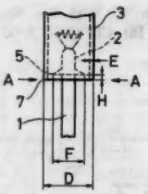
heat-exchanger into which said tubes are interrupted and headed, means for introducing hot gases from said glass furnace into a lower region of said heat-exchanger to circulate upwardly between said open-ended tubes and around said exhaust chamber, baffle means mounted around said tubes to direct said hot gases in a circuitous path around said tubes and out of contact with said glass batch for countercurrent indirect heat transfer, venting means leading from said exhaust chamber to separate the contained moisture in vapor form from said glass batch, and means for delivering the said glass batch continuously to said glass furnace in essentially moisture-free preheated condition.

4,353,727

METHOD FOR FABRICATING FLUORESCENT LAMP

Etsuo Urataki; Yoshio Takano; Yoshinobu Tomita, and Mitsuru Nakagawa, all of Ohme, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,067
Claims priority, application Japan, Jul. 23, 1980, 55-99919
Int. Cl.³ C03D *23/20*
U.S. Cl. 65—36 4 Claims



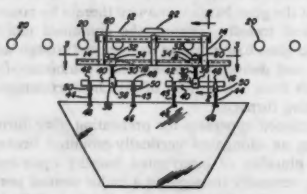
1. In a method for sealing both end parts of a glass tube by the use of mounts; a method for fabricating a fluorescent lamp comprising the step of holding the mount inside said glass tube under a state under which a center axis of said mount having a flared portion coincides with a center axis of the straight glass tube having the unconstricted end part and under which an end face of said flared portion lies slightly inwards with respect to an end face of said glass tube, and the step of uniformly heating an outer surface of said end part of said glass tube while maintaining the surface temperature of the whose glass tube at a temperature which is sufficient to prevent water droplets to adhere to the inner surface of the glass tube, thereby to melt said flared portion and said end part of said glass tube and to stick them to each other.

4,353,728

TONG SUPPORT CARRIAGE FOR USE IN PRESS BENDING GLASS SHEETS

John C. Slabach, Jr., and Joseph B. Kelly, both of Crestline, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 11, 1981, Ser. No. 262,104
Int. Cl.³ C03B *23/02*
U.S. Cl. 65—273 9 Claims



1. A carriage for supporting tongs that grip a glass sheet during press bending comprising a straight, elongated tong support member, a pair of straight, elongated slots for said tong support member, a vertical rod supported for sliding movement along each of said elongated slots between first and second positions and free to rotate about the axis of said rod, a clevis attached to the lower end of each rod, a lever arm mounted intermediate its ends to said clevis for rotation therewith about a vertical axis, a tong suspended from each said lever arm on each side of said clevis, said vertical rods being free to slide to said first positions along said tong support member to enable said tongs to grip the upper edge of a flat glass sheet at spaced points flanking points subtended by said vertical rods and to slide to said second positions spaced closer to one another than the distance between said first positions when said glass sheet is shaped by press bending and the distance between said spaced subtended points is shortened.

4,353,729

PLANT FERTILIZING AND GROWTH ACTIVATING STRUCTURES AND APPLICATIONS THEREOF

Alain Faure, Saint-Chamond; Paul Maldonado, Saint Symphorien d'Ozon; Jean-Francois Husson, Bron, and Camille Coste, Ceret, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Filed Apr. 14, 1980, Ser. No. 139,875
Claims priority, application France, Apr. 13, 1979, 79 09417
Int. Cl.³ C05G *1/00*
U.S. Cl. 71—11 9 Claims

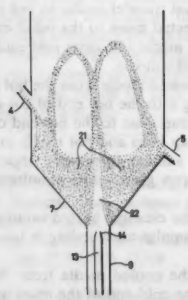
1. A microporous fertilizing composition which aids in retaining water in soil and accelerates the growth of plants produced by the process comprising: mixing a normally solid hydrocarbon base containing asphaltenes at a temperature at which it is fluid with a pulverulent material selected from the group consisting of oxidizing agents which liberate gas when reacted with the hydrocarbon base selected from the group consisting of sulfur, potassium permanganate and potassium bichromate, mineral compounds which liberate a gas in an acid medium and mixtures thereof; causing said gas to be liberated to form the microporous composition and incorporating therein effective amounts of fertilizer.

4,353,730

GRANULATING PROCESS

Bunji Kinno, Chiba; Hiroshi Hirayama, and Tetsuzo Honda, both of Funabashi, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Incorporated, both of, Japan

Filed Nov. 17, 1980, Ser. No. 207,646
Claims priority, application Japan, Nov. 29, 1979, 54/153681
Int. Cl.³ C05B *15/00*; B21B *15/02*
U.S. Cl. 71—29 19 Claims



1. In a granulating process which comprises feeding priming granules of a particulate material to a spouted bed granulation zone and spraying an adherent and solidifiable liquid, together with a gas stream, into said spouted bed granulation zone to

form a spouted bed of said priming granules where said priming granules are enlarged by depositing said adherent and solidifiable liquid on the surfaces thereof, the improvement comprising the steps of providing a plurality of spouted bed granulation zones arranged in series and one or more fluidizing and cooling zones for cooling and drying purposes each disposed between two adjacent ones of said spouted bed granulation zones; introducing said priming granules into the spouted bed granulation zone located at the first stage; passing said priming granules through said spouted bed granulation zones and said fluidizing and cooling zones successively, whereby said adherent and solidifiable liquid sprayed into each of said spouted bed granulation zones becomes attached to said priming granules and said priming granules having said adherent and solidifiable liquid attached thereto are fluidized with a gas stream in the succeeding fluidizing and cooling zone and thereby cooled and/or dried; and withdrawing the enlarged granules from the spouted bed granulation zone located at the last stage.

4,353,731

AMIDE AND HYDRAZIDE DERIVATIVES OF N-TRIFLUOROACETYL-N-PHOSPHONOMETHYLGLYCINE

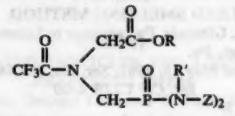
John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 922,923, Jul. 10, 1978. This application Apr. 2, 1981, Ser. No. 250,524

Int. Cl.³ C07F *9/36*; A01N *57/32*

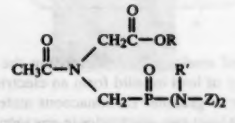
U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, Z is a member of the class consisting of N-piperidyl or N-morpholino.

8. A herbicidal method which comprises contacting a plant or the plant growth medium with a herbicidally effective amount of a compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, Z is a member of the class consisting of N-piperidyl or N-morpholino.

4,353,732

3,4,5,6-TETRAHYDRO-1,2,4,6-THIATRIAZINE-3,5-DIONE-1,1-DIOXIDES; PROCESSES FOR CONTROLLING UNDESIRED PLANT GROWTH

Rolf-Dieter Acker, Leimen; Gerhard Hamprecht, Weinheim; Adolf Parg, Bad Duerkheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

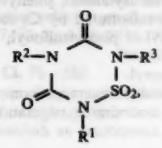
Filed Mar. 26, 1981, Ser. No. 247,983

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013268

Int. Cl.³ A01N *43/72*; C07D *285/00*

U.S. Cl. 71—91 **3 Claims**

1. A 3,4,5,6-tetrahydro-thiatriazine-3,5-dione-1,1-dioxide of the formula



I

where R^1 is hydrogen, R^2 is alkyl of 1 to 4 carbon atoms and R^3 is halogen- or, haloalkyl-substituted phenyl .

3. A process for combating the growth of unwanted plants, wherein the plants or the soil are treated with a herbicidally effective amount of a tetrahydro-thiatriazine-3,5-dione-1,1-dioxide of the formula I as claimed in claim 1.

4,353,733

HERBICIDE MIXTURE

Clive A. Raven, and Alan J. Sampson, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 902,124, May 2, 1978, abandoned. This application Apr. 10, 1979, Ser. No. 28,766

Claims priority, application United Kingdom, May 3, 1977, 18435/77

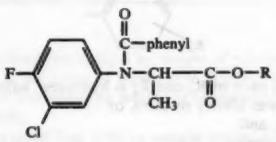
Int. Cl.³ A01N *43/70*

U.S. Cl. 71—93 **6 Claims**

1. A herbicidal composition containing as the herbicide a combination of

(a) 2-ethylamino-4-(1-cyano-1-methylethylamino)-6-chloro-1,3,5-triazine or 2-ethylamino-4-(1-cyano-1-methylethylamino)-6-methylthio-1,3,5-triazine, and

(b) a compound of the formula:



wherein R is methyl, ethyl or isopropyl, the weight ratio of (b) to (a) being within the range of from 1:1 to 50:1.

4,353,734

MALEIMIDE AND SUCCINIMIDE DERIVATIVES AND HERBICIDAL METHOD OF USE THEREOF

Jenö Seres, Istvánné Daróczi, nee Csuka; Jánosné Várkonyi, nee Slovicsko; Gabor Horvath, all of Budapest; Ildikó Szilágyi, Ocsa; Belane Radvanyi, nee Hegedüs, Budapest, all of Hungary

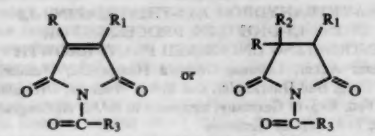
Filed Jul. 24, 1978, Ser. No. 927,343

Claims priority, application Hungary, Jul. 25, 1977, 1757

Int. Cl.³ A01N *43/36*; C07D *207/40*

U.S. Cl. 71—95 **8 Claims**

1. A compound of the formula



wherein

R is hydrogen, halogen, phenyl, phenyl-C_1 to C_4 alkylthio, C_1 to C_6 alkylthio, C_5 to C_7 cycloalkylthio, phenylthio or phenylsulfonyl;

R_1 is amino, C_5 to C_7 cycloalkylamino, C_1 to C_6 alkylamino, C_1 to C_4-alkoxy-substituted-phenyl-(C_1 to C_4-alkylamino), phenylamino, naphthylamino, furfurylamino, phenyl-(C_1 to C_4)alkylamino, phenylamino-substituted by C_1 to C_4 alkoxy, halogen or C_1 to C_4 alkyl or phenylsulfonyl;

R_2 is hydrogen; and

R_3 is C_1 to C_6 alkyl, alkoxy or phenyl.

7. A method of controlling undesirable vegetation comprising applying to the locus of such undesirable vegetation a herbicidally effective amount of a compound as defined in claim 1

4,353,735

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

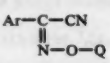
Filed Aug. 20, 1979, Ser. No. 68,263

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.³ A01N *37/34;* C07C *121/52*

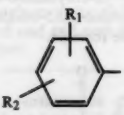
U.S. Cl. 71—105 **5 Claims**

1. A compound of the formula



wherein

Ar is



in which each of R_1 and R_2 is hydrogen, halogen, lower alkyl, lower alkoxy or nitro, or

1-naphthyl, and

Q is halopropynyl.

4,353,736

METHOD OF SELECTIVELY CONTROLLING WEEDS AND HERBICIDAL DIPHENYL ETHER OXIME DERIVATIVES

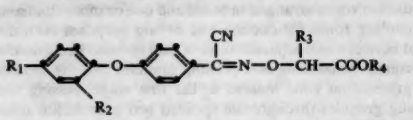
Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 112,767, Jan. 17, 1980, abandoned, which is a continuation of Ser. No. 938,544, Aug. 31, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 229,246

Int. Cl.³ A01N *37/34;* C07C *121/60*

U.S. Cl. 71—105 **14 Claims**

1. A method of selectively controlling weeds in crops of barley, wheat, maize, rice and oats, which comprises treating sown cultivated areas in pre-emergent application, or weed-infested crops of cultivated plants in post-emergent application, with an effective amount, not exceeding 6 kg of active ingredient per hectare of treated crop area, of a diphenyl ether oxime derivative of the formula I



(I)

wherein

R_1 is chlorine or a trifluoromethyl group,

R_2 is hydrogen or chlorine,

R_3 is hydrogen or a methyl group and

R_4 is a C_1–C_6-alkyl or a C_3–C_6 alkenyl group.

4,353,737

METHOD OF MAKING METALLIC GLASS POWDERS FROM GLASSY ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 23,411, Mar. 23, 1979, Pat. No. 4,290,808. This application Apr. 17, 1981, Ser. No. 255,020

Int. Cl.³ B22F *9/04, 9/06*

U.S. Cl. 75—0.5 R **8 Claims**

1. A method for making metallic glass powder comprising: annealing a solid metallic glass body at temperature within the range from about 250° C. below its glass transition temperature up to its glass transition temperature, for time sufficient to effect embrittlement; and comminuting the embrittled metallic glass body.

4,353,738

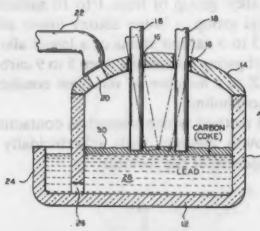
LEAD SMELTING METHOD

John A. Persson, Gibsonia, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed May 18, 1981, Ser. No. 264,447

Int. Cl.³ C22B *4/00*

U.S. Cl. 75—10 R **6 Claims**



1. A method of smelting lead comprising the steps of containing a quantity of lead in solid form an electric arc furnace, disposing a layer of granular carbonaceous material ove[illegible]id lead, disposing at least two electrodes in engagement wit[illegible] carbonaceous material and in spaced apart relation, passing an electric current through said carbonaceous material and between said electrodes for generating resistance heating in carbonaceous material, transferring heat from said carbonaceous material to said lead, and continuing the energization of said electrodes until said lead material is fused.

4,353,739

DESULPHURIZATION OF FERROUS MELTS

John K. Batham, Brierley Hill; Alan G. Fox, Birmingham, and Evan T. R. Jones, Sutton Coldfield, all of England, assignors to Foseco International Limited, Birmingham, England

Filed May 7, 1981, Ser. No. 261,685
Claims priority, application United Kingdom, May 10, 1980, 8015566
Int. Cl.³ C21C 7/02
U.S. Cl. 75—58 14 Claims

1. A method of desulphurising a ferrous melt which comprises injecting into the melt a desulphurisation agent comprising lime-containing particles having pores, which pores are blocked by the solidification of molten inorganic matter distinct from lime in the pores of the lime, the surfaces of the particles thereby being rendered smooth and having a low tendency to absorb moisture thereby being imparted to the particles.

4,353,740

CHLORINE EXTRACTION OF GOLD

Wendell E. Dunn, Star Rte. 68D, Lead, S. Dak. 57754

Filed Sep. 11, 1981, Ser. No. 301,239
Int. Cl.³ C22B 11/00
U.S. Cl. 75—83 6 Claims

1. A process for recovering gold from a gold-containing ore comprising the steps of:

(a) grinding the ore,

(b) oxidative roasting of the ore in the presence of a gas selected from the group consisting of air or oxygen to remove sulfides in the ore, at an elevated temperature;

(c) chlorinating the ore by contacting the ore with chlorine at a temperature of 300° to 400° C., in the presence of at least one mole or iron per mole of gold present in the ore to convert gold in the ore into volatile gold chloride and gold chloride-iron chloride complex and producing spent ore,

(d) passing volatiles from the chlorination step through a halide salt selected from the group consisting of a alkali and alkaline metal chloride, bromide and iodide to separate volatilized gold values to form a halide salt-gold chloride mixture, and

(e) separating metallic gold from the halide salt.

4,353,741

SILVER COATED PARTICLES AND A PROCESS FOR PREPARING THEM

Italo A. Capuano, Orange; Lawrence P. Carr, Plantsville, and Patricia A. Turley, Orange, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 19,795, Mar. 12, 1979, abandoned. This application Mar. 27, 1980, Ser. No. 134,386
Int. Cl.³ B01J 21/18; C07D 301/04
U.S. Cl. 75—109 24 Claims

1. A process for producing silver coated particles which comprises:

(a) admixing active carbon carrier particles with an aqueous solution of a silver salt to form a slurry consisting of said active carbon carrier particles in said aqueous solution of the silver salt;

(b) adding a reducing agent consisting of a hydrogen compound to said slurry to deposit metallic silver on said active carbon carrier particles and therby form a reaction mixture of the resulting silver coated active carbon carrier particles in an acid medium having an increasing acidity as said silver is deposited, at the conclusion of said silver deposition, said reaction mixture having a pH of less than about 4; and

(c) recovering said silver coated particles from said reaction mixture.

4,353,742

COBALT-CONTAINING ALLOYS

Paul Crook, Fairford, England, assignor to Cabot Stellite Europe Limited, Swindon, England

Filed Sep. 20, 1979, Ser. No. 77,825
Claims priority, application United Kingdom, Oct. 3, 1978, 39117/78; Apr. 27, 1979, 7914682
Int. Cl.³ C22C 30/00
U.S. Cl. 75—122 14 Claims

1. An alloy consisting essentially of the following composition (excluding impurities):

	Constituents	% by weight of composition
(a)	cobalt	25 to 40
(b)	nickel	4 to 12
(c)	iron	more than 10, up to 25
(d)	chromium	27 to 35
(e)	at least one element selected from the group consisting of molybdenum and tungsten	5 to 15
(f)	at least one element selected from the group consisting of carbon and boron	0.3 to 2.25
(g)	material selected from the group consisting of silicon and manganese	0 to 3
(h)	material selected from the group consisting of titanium, hafnium, niobium, zirconium, vanadium and tantalum	0 to 5
(i)	copper	0 to 5
(j)	material selected from the group consisting of lanthanum, cerium, yttrium and thorium	0 to 2

wherein:

(i) the combined percentages by weight of cobalt, nickel and iron are in the range of about 50 to 70% by weight;

(ii) the total percentage by weight of constituents (h) to (j) is up to 7.5%;

(iii) there is more than 30% by weight of chromium present when there is at least 2% by weight of constituent(s) (f); and

(iv) the % by weight iron is greater than the % by weight nickel.

4,353,743

STEEL COMPOSITION FOR CHIPPER KNIFE

George F. Vander Voort, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 43,069, May 29, 1979, Pat. No. 4,287,007. This application Dec. 18, 1980, Ser. No. 217,650
Int. Cl.³ C22C 39/02
U.S. Cl. 75—124 8 Claims

1. A wear resistant and machinable ferrous alloy consisting essentially of, by weight, carbon between about 0.40 to 0.60%, a maximum of about 1.0% manganese, a maximum of about

0.035% phosphorus, a maximum of about 0.035% sulfur, a maximum of about 1.50% silicon, a maximum of about 2.00% nickel, chromium between 4.4 and 5.2% molybdenum between 1.6 and 2.3%, a maximum of about 0.10% aluminum, a maximum of 0.52% niobium, and the balance essentially iron, said

alloy having the capability of being austenitized at a temperature no higher than 1850° F., quenched and double tempered within the range of 940° to 1020° F. to produce a level of toughness of at least 100 ft-lbs on unnotched specimens, and a hardness of at least 56 HRC.

4,353,744

PROCESS FOR PRODUCING A VANADIUM SILICON ALLOY

Rodney F. Merkert, Buffalo, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1981, Ser. No. 278,960
Int. Cl.³ C22B *34/22*
U.S. Cl. 75—134 V 1 Claim

1. A process for producing a vanadium-silicon alloy having a low carbon and oxygen content, which comprises: forming a mixture of finely-divided V_2O_3, carbon and silicon metal in at least the stoichiometric amounts necessary to reduce the V_2O_3 and form V_2Si while simultaneously preventing the vanadium from combining with carbon and oxygen, and then heating the mixture to temperatures of between about 1200° C. and 1400° C. under a vacuum of between about 100 and 500 microns.

4,353,745

CLEANER FOR ANTI-GRAFFITI SYSTEM

Robert E. Ebbeler, Cincinnati, Ohio, assignor to Chemed Corporation, Cincinnati, Ohio

Filed Aug. 26, 1981, Ser. No. 296,434
Int. Cl.³ C09D *5/20*
U.S. Cl. 106—2 3 Claims

1. A composition adapted for priming a surface prior to the application of a protective coating thereon and for removing said protective coating when defaced with graffiti, said composition consisting essentially of (in parts by weight):

Ethylene glycol mono ethyl ether	1.0–99.0
Water	1.0–20.0
Methylene chloride	5.0–55.0
Non-ionic surfactant	0.1–5.0
Triethanolamine	0.1–5.0

4,353,746

HYDRAULIC CEMENT COMPOSITION

James D. Birchall, Mouldsworth; Kevin Kendall, Runcorn, and Anthony J. Howard, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 17, 1980, Ser. No. 160,368
Claims priority, application United Kingdom, Dec. 3, 1979, 7941587
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—89 16 Claims

1. A cement composition which comprises a hydraulic cement and water, the hydraulic cement comprising two or more distinct bands or modes of particle sizes in which the total weight of particles of intermediate size does not exceed 20% of the total weight of the particles in the bands or modes adjacent thereto, and in which the amount of water is not greater than 25% by weight of the hydraulic cement.

4,353,747

HYDRAULIC CEMENT COMPOSITION

James D. Birchall, Mouldsworth, and Kevin Kendall, Runcorn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 17, 1980, Ser. No. 160,370
Claims priority, application United Kingdom, Jun. 29, 1979, 7922788
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—89 13 Claims

1. A hydrualic cement composition comprising a mixture of at least one particulate hydrualic cement and water in which the weight average mean particle size of the particles of the cement is less than 20 microns and in which the proportion of water is not greater than 30% by weight of the hydraulic cement in the composition.

4,353,748

CEMENTITIOUS PRODUCT

James D. Birchall, Mouldsworth; Kevin Kendall, Runcorn, and Anthony J. Howard, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 13, 1980, Ser. No. 159,283
Claims priority, application United Kingdom, Jun. 26, 1979, 7922208; May 2, 1980, 8014847
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—89 15 Claims

1. A cementitious product produced by setting of a composition comprising a mixture of at least one hydraulic cement and water not more than 2% of the total volume of the product comprising pores of maximum dimension exceeding 100 microns.

4,353,749

PROCESS OF PRODUCING A USEFUL SOIL CEMENT PRODUCT FROM INDUSTRIAL CHEMICAL WASTE

Louis F. Ray, 5441 Heatherstone, Baton Rouge, La. 70808, and David G. Azar, Sr., 11023 Major Oaks Dr., Baton Rouge, La. 70815

Filed Oct. 23, 1980, Ser. No. 199,909
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—97 4 Claims

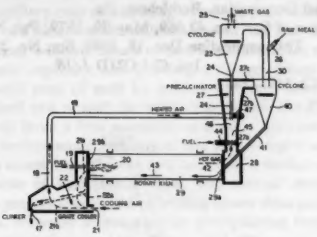
1. A process for producing an environmentally safe and useful product, said process consisting essentially of the steps of mechanically mixing an acid waste having a particle size such that it passes a 50 mesh sieve, 25% to 100% by weight calcium sulfate, and a pH of about 1.5 to 6.5 with an alkaline waste material having a particle size such that all of said alkaline material passes a 50 mesh sieve, said alkaline waste material having a pH from about 7.5 to 12.5, the blend of said acid waste and said alkaline waste having a pH of about 7.0 to 10.0, and mixing said blend with 1% to 30% by weight of either Portland cement and/or fly ash and water, compacting said mixture, and curing said mixture to form a soil cement product.

4,353,750

METHOD OF FIRING CARBONATE-CONTAINING MINERALS

Wolfram Quittkat, Gauting, Fed. Rep. of Germany, assignor to BKMI Industrieanlagen GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 31, 1981, Ser. No. 288,935
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029210
Int. Cl.³ C04B 7/02
U.S. Cl. 106—100 4 Claims



1. In a method of calcining a raw meal wherein the raw meal is preheated, the preheated raw meal is deacidified and precalcined in an upright precalcinator at a solids-inlet end of a rotary kiln, the deacidified precalcined meal is calcined in the rotary kiln, the calcined product of the rotary kiln is cooled by air which is thereby heated, hot kiln gases passing upwardly through the precalcinator, a fuel is introduced into the precalcinator and oxidation is effected in the precalcinator with said heated air, the improvement which comprises:

passing the hot kiln gases upwardly through said precalcinator with a velocity sufficient to maintain a suspension of the preheated meal at a location in said precalcinator below which the particles of said meal are prevented from passing, mixing said fuel with said hot kiln gases in a zone spaced below said location, thereby gasifying said fuel in said hot kiln gases with sensible heat thereof producing a gasified mixture, thereafter contacting said gasified mixture with said meal at said location, and oxidizing the gasified mixture with said heated air whereby said meal is precalcined.

4,353,751

METHOD TO PRODUCE MINERAL FILLERS CONTAINING HYDRATED CALCIUM MONOCARBOALUMINATE

Jacques Baudouin; Jean-Pierre Caspar, both of Viviers, and Jacques Gaillard, Villeneuve de Berg, all of France, assignors to Lafarge, Paris, France

Filed Nov. 26, 1980, Ser. No. 210,543
Claims priority, application France, Nov. 30, 1979, 79 29534
Int. Cl.³ C04B 31/40
U.S. Cl. 106—306 10 Claims

1. A method for producing mineral fillers containing hydrated calcium monocarboaluminate, said process comprising reacting aluminum hydroxide under crystallized form, calcium oxide or calcium hydroxide and a normal carbonate $CaCO_3$ and/or a double calcium magnesium carbonate, in the presence of water, the operating temperature being higher than 50° C.

4,353,752

METHOD OF MAKING A SUSPENSION OF A FILLER FOR RUBBER MIXTURES

Genrickh D. Lyakhevich, ulitsa Matusevicha, 3, kv. 146, and Alexandr E. Sokolovsky, ulitsa Olshevskogo, 33, korpus 1, kv. 67, both of Minsk, U.S.S.R.

Filed Jan. 7, 1981, Ser. No. 223,076
Int. Cl.³ C09C 1/26, 1/04, 1/58
U.S. Cl. 106—309 5 Claims

1. A method of making a suspension of a filler for rubber mixtures in a hydrocarbonaceous solvent, comprising the steps of:

(a) mixing polymeric materials containing a filler with a hydrocarbonaceous solvent in a ratio of 1:05 to 1:60 parts by mass;

(b) heating the obtained mixture under such pressure as to prevent volatilization of any component thereof at a temperature sufficient to bring about thermal decomposition of the polymeric materials and for formation of a suspension;

(c) distilling low-boiling fractions from the suspension formed as a result of the thermal decomposition in the presence of an inert gaseous agent at a temperature of 50° to 400° C. and at a pressure of 1.10^2 to 1.10^5 N/m^2.

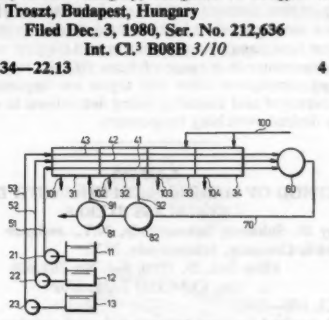
2. A method as claimed in claim 1, wherein the hydrocarbonaceous solvent is liquid hydrocarbon selected from the group consisting of petroleum fractions having a boiling temperature of from 25° to 600° C.; petroleum residues having a softening temperature by the ring and ball method of from 5° to 150° C.; low-boiling fractions obtained as a result of said distillation from the products of the thermal decomposition; mixtures of said petroleum fractions with the suspension of a filler; mixtures of said low-boiling fractions with the suspension of a filler.

4,353,753

CLEANING BOILER TUBES OF DIGESTING HEAT EXCHANGERS USED IN ALUM EARTH PROCESSING

Zoltan Osvald; Gergely Veres, both of Budapest; Gyula Odor, Mosonmagyarovar; György Lang, and Janos Steiner, both of Budapest, all of Hungary, assignors to Magyar Aluminiumipari Troszt, Budapest, Hungary

Filed Dec. 3, 1980, Ser. No. 212,636
Int. Cl.³ B08B 3/10
U.S. Cl. 134—22.13 4 Claims



1. A method of operating a plant for digesting aluminum oxide in a sodium aluminate liquor, said method comprising the steps of:

(a) passing a slurry of aluminum oxide mineral in a sodium aluminate liquor through a plurality of tubes of at least one tube-type digester while heating said tubes of said digester and recovering digestion liquor downstream from said digester;

(b) passing a cleaning liquid selected from the group which consists of sodium aluminate liquor, sodium hydroxide solution and water through at least one other tube of said digester while the latter is heated concurrently with the other tubes thereof and other tubes of said digester conduct said slurry therethrough and recovering the heated

cleaning liquid downstream of said digester, whereby deposits formed in the tube traversed by the cleaning liquid during previous passage of slurry therethrough, are dissolved in the cleaning liquid;

(c) cyclically applying step (b) to each of the tubes of the digester while conducting said slurry as in step (a) through each tube previously subjected to step (b); and

(d) combining the digestion liquid with the cleaning liquid recovered from step (b).

4,353,754

THERMO-SENSITIVE SWITCHING ELEMENT MANUFACTURING METHOD

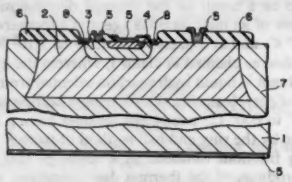
Kenichi Yamanaka; Yutaka Mihashi, and Toshio Sogo, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,568

Claims priority, application Japan, Aug. 6, 1979, 54/101576

Int. Cl.³ H01L *21/265, 23/56*

U.S. Cl. 148—1.5 **4 Claims**



1. A method of manufacturing a semiconductor element having a four-layer pnpn structure including a first semiconductor region of a first conductivity type, a second semiconductor region of a second conductivity type in contact with said first semiconductor region through a first pn junction, a third semiconductor region of said first conductivity type in contact with said second semiconductor region through a second pn junction, and a fourth semiconductor region of said second conductivity type in contact with said third semiconductor region through a third pn junction, said second pn junction having a defect layer formed therein by implantation of argon ions, comprising subjecting said element to annealing at a temperature in a range of from 400° C. to 900° C. in a nitrogen atmosphere after said argon ion implantation, said temperature of said annealing being determined in accordance with a desired switching temperature.

4,353,755

METHOD OF MAKING HIGH STRENGTH DUPLEX STAINLESS STEELS

Harvey D. Solomon, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,840

Int. Cl.³ C21D *1/26, 6/02*

U.S. Cl. 148—136 **11 Claims**

1. A method for heat treating a duplex stainless steel alloy body which comprises the steps of:

(1) heating said alloy body to a first temperature and maintaining said first temperature for a first time sufficient to convert said duplex microstructure to a substantially ferritic microstructure;

(2) cooling said alloy body to about room temperature at a rate sufficient to retain said substantially ferritic microstructure;

(3) heating said alloy body to a second temperature and maintaining said second temperature for a time sufficient to precipitate austenite, but insufficient to precipitate sigma phase, in said substantially ferritic microstructure; and

(4) cooling said alloy body to about room temperature at a rate sufficient to retain the microstructure developed in step (3) thereby producing a duplex stainless steel alloy body having a microstructure of austenite precipitates in a ferritic matrix, substantially isotropic yield and tensile strengths, substantially isotropic impact properties of at least about 50 ft-lbs and a minimum yield strength of at least 90 ksi.

4,353,756

METHOD OF HEAT TREATING A STEEL COMPOSITION FOR CHIPPER KNIFE

George F. Vander Voort, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 43,069, May 29, 1979, Pat. No. 4,287,007. This application Dec. 18, 1980, Ser. No. 217,728

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—143 **8 Claims**

1. A method of heat treating a ferrous alloy consisting essentially of, by weight, carbon between about 0.40 and 0.60%, a maximum of about 1.0% manganese, a maximum of about 0.035% phosphorus, a maximum of about 1.0% sulfur, a maximum of about 1.50% silicon, a maximum of about 2.00% nickel, chromium between about 4.4 and 5.2%, molybdenum between about 1.6 and 2.3%, a maximum of about 0.10% aluminum, a maximum of 0.52% niobium, and the balance essentially iron, by the steps which include subjecting said alloy to an austenitizing temperature no higher than 1850° F., quenching, and double tempering at a temperature between 940° to 1020° F., whereby said alloy is characterized in the quenched and tempered state by a level of toughness of at least 100 ft-lbs on unnotched specimens, a hardness of at least 56 HRC, good machinability, and good wear resistance.

4,353,757

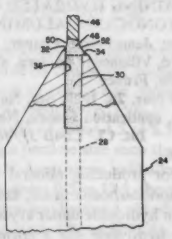
DISPLACED CAPILLARY DIES

Juris P. Kalejs, Wellesley; Bruce Chalmers, Falmouth, both of Mass., and Thomas Surek, Englewood, Colo., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Division of Ser. No. 11,527, Feb. 12, 1979. This application Jul. 3, 1980, Ser. No. 165,635

Int. Cl.³ C30B *15/34*

U.S. Cl. 148—172 **5 Claims**



1. A method of making a solar cell comprising the steps of:

(a) growing a silicon ribbon from a silicon melt by means of a capillary die so that silicon carbide precipitating from the melt will be distributed asymmetrically in the crystalline body, the growth of said ribbon being achieved by providing a die made wholly of graphite and having an upper end, a lower end and a capillary, with said upper end comprising first and second surfaces spaced from one another so as to provide an opening for said capillary and so that the first surface is located at a greater distance from said botton end than is said second surface, immersing said bottom end in a reservoir supply of a silicon melt so that molten silicon will substantially fill said capillary by action of capillary rise, establishing a growth pool of melt in the form of a film of molten silicon on said first and second end surfaces which extends to and is a continuum of the melt in said capillary, and growing a silicon ribbon from said growth pool of melt by pulling the same along the longitudinal axis of said die while maintaining the film so that it will have a first meniscus extending between said first end surface and a first side of said ribbon and a second meniscus extending between said second end surface and a second side of said ribbon, with said second meniscus having a greater length and extending lower than said first meniscus, whereby silicon carbide precipitating from the film and appearing as an impurity in said ribbon is concentrated near the first side of said ribbon grown from said first meniscus;

forming a P-N junction at said second side of said ribbon; and

providing electrodes to the opposite sides of at least a portion of said ribbon with the electrode on said second side of said ribbon grown being adapted to allow said junction to respond to radiant energy received by said second side of said ribbon.

4,353,758

DIRECT PROCESS FOR EXPLOSIVES

Irving B. Akst, 1032 Duncan St., Pampa, Tex. 79065, and Mary M. Stinecipher, 324 Connie St., Los Alamos, N. Mex. 87544

Filed Nov. 29, 1979, Ser. No. 98,643
Int. Cl.³ C06B *31/32*
U.S. Cl. 149—109.6 **3 Claims**

1. A method of forming an explosive mixture of ammonium nitrate and ethylenediamine dinitrate which comprises:

(a) combining ethylenediamine and a stoichiometric excess of ammonium nitrate, said ammonium nitrate being present in an amount to form, after reaction of said ethylenediamine therewith, a mixture of ammonium nitrate and ethylenediamine dinitrate; and

(b) reacting said ethylenediamine with the stoichiometric portion of said ammonium dinitrate to form said explosive mixture of ammonium nitrate and ethylenediamine dinitrate.

4,353,759

PROCESS AND APPARATUS FOR MATCHING INDICIA PANELS AND THE LIKE

Glenda L. Stallings, 4398 Arbor Dr., Okemos, Mich. 48864

Filed May 1, 1981, Ser. No. 259,452
Int. Cl.³ B32B *31/18*; G01B *3/14*
U.S. Cl. 156—64 **2 Claims**

1. An apparatus for matching a covering material to a background where the covering is to be applied to cover plates comprising:

a laminar structure having an upper sized and scored templet sheet having a lower release surface, said sheet having sized and scored portions defining relief indicia around orifices and edges of selected of said cover plates;

an intermediate contact adhesive layer releasably adhered to said templet sheet; and

a lower release paper sheet releasably adhered to said intermediate adhesive layer.

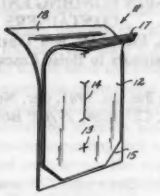
2. A process for matching a cover material to a background where the covering is to be applied to cover plates, the steps of:

covering an existing cover plate with a piece of covering material and adjusting said covering material to match background wall covering material;

marking through said piece of cover material to register positions on said cover plate while holding said match;

applying a pre-scored and sized templet adhesively to said back side of said piece of covering material and locating by registry with said marked positions;

trimming said covering material to templet size and scoring said covering as said templet is scored;



peeling said templet away from said adhesive and exposing said adhesive surface as adhered to the back side of said trimmed covering material;

registering said wall plate to be covered over said exposed adhesive surface in face down relation and pressing said wall plate face against said adhesive using said marked positions for location; and

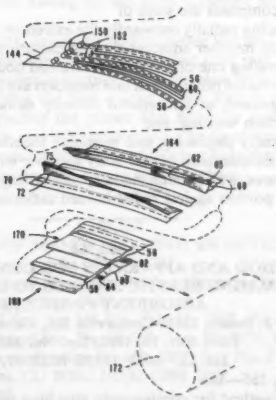
wrapping the surplusage of adhesive backed covering material around the edges of said wall plate in accord with said sizing and scoring for smooth adherence and clean lines around edges and openings whereby upon attaching said covering wall plate to its original position the covering material is in pattern registry with said wall covering the background.

4,353,760

FORMING ARTICLES WITH SLIDE FASTENERS AND ATTACHED SEWING GUIDES

George B. Moertel, Conneautville, Pa., assignor to American Thread, Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,407
Int. Cl.³ A44B *19/42, 19/34*
U.S. Cl. 156—66 **14 Claims**



1. A method of forming slide fasteners with attached sewing guides comprising

coating a stock strip of paper with strips of adhesive and release material, the adhesive strips being suitable for

adhering to tapes of a slide fastener and to an article to which the slide fastener is to be sewn,

forming pairs of member sections with folded article-holding flaps from the stock strip,

attaching the pairs of member sections to center strip sections to form composite sections,

punching perforations in the composite sections to form guide sections, and

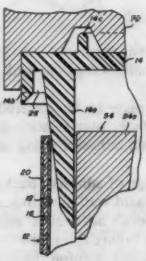
attaching the guide sections by means of at least two of the strips of adhesive to tapes of a slide fastener.

4,353,761

METHOD FOR SPIN BONDING ENDS FOR COMPOSITE CONTAINERS

Stephen E. Woerz, Florissant, and Travis K. Canup, Ferguson, both of Mo., assignors to Boise Cascade Corporation, Boise, Id.

Filed Jul. 30, 1981, Ser. No. 288,344
Int. Cl.³ B29C *27/08*; B65B *7/28*
U.S. Cl. 156—69 **3 Claims**



1. The method of spin bonding to one end of a vertically arranged tubular composite container body member an end closure member formed of thermoplastic synthetic plastic material, said body member including a fibrous body wall layer, an inner liner layer formed of a thermoplastic synthetic plastic material, and an outer label layer, said end closure member including opposite said body member annular inner fin and outer chime portions that are concentrically spaced to define an annular groove arranged to receive the adjacent extremity of said body member, said groove having side walls that converge in the direction of the bottom of the groove, which comprises the steps of

(a) flaring radially outwardly the extremity of the composite body member adjacent the end closure member;

(b) rotating one of the end closure and body members relative to the other, when said members are in spaced vertical alignment, at a rotational velocity sufficient to produce friction welding; and

(c) axially displacing said members together to wedge the flared extremity of said body member within said annular groove while simultaneously supporting the end closure fin portion against radial inward deflection.

4,353,762

METHOD AND APPARATUS FOR CONTINUOUSLY ATTACHING ELASTIC STRANDS TO DISPOSABLE ABSORBENT PRODUCTS

Francis J. Bouda, 13319 Centerville Rd., Cleveland, Wis. 53015

Filed Nov. 19, 1980, Ser. No. 208,222
Int. Cl.³ A61F *13/16*; B32B *31/08*
U.S. Cl. 156—164 **7 Claims**

1. A method for continuously attaching selected lengths of elastic ribbon to isolated portions of a moving, substantially inelastic web of inter-connected articles to impart an elasticized character to pre-determined isolated portions of said articles, while preserving the substantially inelastic character of said articles in areas where said ribbon is unattached to said web, said method comprising the steps of:

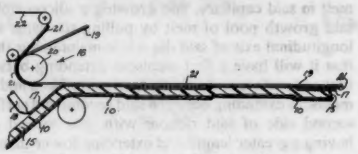
feeding an elastic ribbon to an assembly station in a stretched condition;

continuously applying an adhesive to said stretched elastic ribbon along the length of said ribbon while said stretched elastic ribbon is being fed to said assembly station;

feeding a web of inter-connected articles made with webs of substantially inelastic materials to said assembly station;

applying a release medium to spaced, intermittent portions of one of said substantially inelastic webs;

adhering the stretched, elastic strand to pre-determined, isolated portions of one of said webs in areas which do not have the release medium applied thereto;



maintaining said elastic ribbon in a stretched condition at least until said adhesive sets up;

cutting said elastic ribbon transversely in an area which is not adhered to said web, thereby forming severed, unadhered ends of elastic at both ends of each length of stretched, elastic ribbon adhered to said web;

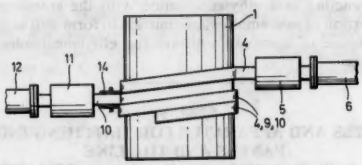
and allowing the severed, unadhered ends of said elastic ribbon to relax and contract to their unstretched state, whereby said unadhered ends do not impart an elasticized character to said web, nor do they interfere with the functioning of the elasticized portion of the web to which the selected lengths of elastic ribbon are adhered.

4,353,763

METHOD FOR MAKING PIPES, PLATES OR CONTAINERS FROM PLASTIC MATERIAL

Günter Simons, Troisdorf, Fed. Rep. of Germany, assignor to Henze GmbH, Troisdorf-Oberlar, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,714
Claims priority, application Fed. Rep. of Germany, May 13, 1980, 3018194
Int. Cl.³ B65C *31/00*
U.S. Cl. 156—184 **6 Claims**



1. A process for producing a composite plastic tubular member of two or more plastic materials, said tubular member being leach and acid resistant and having inner and outer layers of different thermoplastic materials and an intermediate layer of a thermosetting resin, said process comprising the steps of:

(a) disposing a first layer of a thermoplastic material about a heated winding element for forming said inner layer, said first layer of thermo-plastic material being polyvinylidene fluoride;

(b) fusing overlapping adjacent edges of said first layer;

(c) disposing a second intermediate layer of a thermo setting resin about said inner layer of polyvinylidene;

(d) disposing a third outer layer of a thermoplastic material

about said second layer, said third layer of thermoplastic material being polypropylene;

(e) fusing said outer layer of polypropylene to said first layer of polyvinylidene fluoride and said second layer of the thermosetting resin.

4,353,764

PROCESS OF FORMING PROFILES ESPECIALLY TUBULAR PROFILES

Georges Sireix, 9, Rue Saint-Marc, 68400 Riedisheim (Haut-Rhin), France

Filed Mar. 9, 1981, Ser. No. 241,529
Claims priority, application France, Mar. 11, 1980, 80 05684
Int. Cl.³ B29D 23/10
U.S. Cl. 156—203 7 Claims

1. Process of forming a tubular profile by gluing together a plurality of bands of fibrous, cellulosic, metallic, plastic or other flexible material, comprising the steps of:

superposing a plurality of said bands, previously coated with adhesive on at least one face, with said bands offset laterally relative to one another so that their side edges are stepped,

initially bonding said superposed bands together only in an area of narrow width intermediate their side edges,

progressively bending said superposed bands into tubular form around a mandrel and concurrently progressively increasing the width of the area in which said bands are bonded while advancing said superposed bands in a lengthwise direction, the progressive bending of said bands and the lateral spreading of said area of bonding of said bands proceeding in a helicoidal manner until the area in which said bands are bonded has extended to lateral edges of said bands as said lateral edges are brought together, and

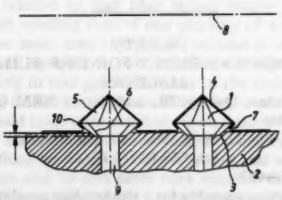
joining offset lateral edges of said superposed bands to complete the formation of said tubular profile.

4,353,765

PROCESS FOR MAKING SINGLE ORNAMENT STONES COATED WITH HEAT-ACTIVATED ADHESIVE

Christian Covi, Innsbruck, and Martin Pöll, Fritzens, both of Austria, assignors to D. Swarovski & Co., Osterreich, Fed. Rep. of Germany

Continuation of Ser. No. 102,623, Dec. 11, 1979, abandoned.
This application Mar. 18, 1981, Ser. No. 245,174
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855426
Int. Cl.³ B29C 17/04
U.S. Cl. 156—212 2 Claims



1. In a process for making single ornament stones with a coating of heat-activated adhesive, including placing a plurality of ornament stones having opposed ornament and mounting faces in spaced apart hollows located on one side of a plate provided with means for applying a vacuum to the bottom area of the hollows with the ornament faces in the hollows, the mounting faces and ornament faces of each stone being divided by a periphery of maximum diameter that is greater than that diameter of the stones that lies in the plane including the apertured side of the plate when the stones are disposed in the hollows, the maximum diameter of each hollow on the side of the plate being smaller than the maximum diameter of the respective ornamental stone in the hollow, placing a sheet of heat-activated and softenable adhesive foil over the mounting faces of the ornament stones with the foil being disposed generally parallel to the plate; drawing the adhesive foil over the mounting faces of the stones towards the plate by applying a vacuum between the foil and the plate through the hollows while heating the foil to soften same to cause the foil to adhere to the stones, the improvement comprising:

drawing the foil over and around the periphery of maximum diameter of the stones by vacuum until the foil extends over and adheres to the mounting face and a portion of the ornamental face of each stone, the applied vacuum and heat being sufficient to cause stretching and thinning of the foil in the areas between the stones and the plate;

cooling the stones and foil to room temperature; and

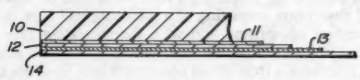
separating individual stones with adhered foil from the unitary assembly of multiple stones and sheet of foil by severing the foil at the thinned areas.

4,353,766

LIGHT AND HEAT REFLECTING SURFACE

Mahesh J. Dani, Newtown, Pa., assignor to Dunmore Corporation, Newtown, Pa.

Filed May 19, 1980, Ser. No. 150,932
Int. Cl.³ B44C 31/00; B32B 31/00
U.S. Cl. 156—233 2 Claims



1. The method of preparing glass window pane having thermally insulating and controlled light transmitting properties which comprises applying to one surface of the pane a coated plastic film having on the surface thereof successive layers of:

a release coating, an acrylic nitrocellulose lacquer,

and a vapor deposited aluminum coating over said lacquer, with said aluminum coating facing the glass surface; adhesively attaching the thus coated plastic film to the glass pane, and peeling the plastic film from the pane as the release layer; said aluminum coating being of such thickness as to transmit 10 to 80% of incident light through the pane after peeling the plastic film therefrom.

4,353,767

METHOD OF MANUFACTURING AN OPTICAL READING DISC

Richard L. Wilkinson, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 121,852, Feb. 15, 1980, abandoned, which is a division of Ser. No. 67,657, Aug. 20, 1979, Pat. No. 4,264,911. This application Jun. 19, 1981, Ser. No. 275,270
Int. Cl.³ B29C 19/00; C09J 5/02
U.S. Cl. 156—245 5 Claims

1. A method of making an optical recording disc, comprising the steps of:

molding two thin, disc-shaped members, each having an inner integral ring-shaped boss located at the center of the

member and an outer integral ring-shaped boss concentric with said inner boss and located at the outer periphery of said member and projecting upwardly from a confronting side thereof and forming a shallow, annular recess therebetween wherein the inner and outer bosses of each member both have uniform thicknesses and planar upper surfaces parallel to the plane of the member, and wherein the two members are substantially identical in shape and at least one of the two members is transparent;

said step of molding including a step of forming a circular hole in the center of each of the two disc-shaped members, concentric with its inner and outer bosses;

coating the annular recess portion of one of the two disc-shaped members with a thin recording layer of light-sensitive material; and

bonding together the pair of disc-shaped members in a coaxial relationship, with their respective inner and outer bosses in abutment with each other, thereby producing the optical recording disc.

4,353,768

METHOD FOR CONSTRUCTING A LIGHTWEIGHT RESISTIVE SCREEN FOR UNDERWATER SOUND ABSORPTION

Jerome Goodman, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1981, Ser. No. 306,840
Int. Cl.³ B32B *3/12*; E04B *1/84*
U.S. Cl. 156—253 **5 Claims**

1. A method for preparing a resistive screen for underwater sound absorption consisting of a stiffening cell type structure, the method comprising adding a thermosetting type plastic material to the cells within said structure, wherein said structure's thickness is from about one-fourth inch to about one-half inch, heating said structure under pressure until said thermoplastic is rigid and forming small apertures within said plastic material by a method selected from the group consisting of laser irradiation, high velocity liquid droplets, neutron irradiation, and electrical spark discharge.

4,353,769

RADAR TRANSPARENT RIGID POLYURETHANE LAMINATE SYSTEMS FOR RADOMES

Henry J. Lee, 12 Knollwood Dr., Cherry Hill, N.J. 08002

Filed Oct. 3, 1980, Ser. No. 193,859
Int. Cl.³ B32B *31/12*
U.S. Cl. 156—299 **8 Claims**

1. A method of fabricating a composite laminate with low dielectric constant and low loss tangent particularly useful in radomes, comprising:

heating a selected amount of 4,4-diphenyl methane diisocyanate to melt without polymerization;

mixing an effective amount of 2,4-toluene diisocyanate to form a mixture of selectively reactive diisocyanates;

adding to said mixture an effective amount of ethylene glycol to form a polymerized reaction product having an excess of isocyanate groups without cross-linking;

heating the reaction product for a controlled time and at a controlled temperature to increase the polymerization to form a polyurethane resin of proper viscosity for optimum wetting without cross-linking;

impregnating an effective amount of the resin in a plurality of plies of fibrous cloth to form a composite; and

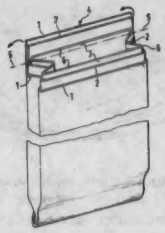
curing the composite under a controlled temperature and pressure for a predetermined time to produce a rigid polyurethane laminate by allophanate formation.

4,353,770

METHOD FOR WELDING THE INNER LAYERS OF MULTI-LAYER PAPER SACKS

Gustav Kuckhermann, Achern, Fed. Rep. of Germany, assignor to Icoma Packtechnik GmbH, Achern, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,238
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951597; Dec. 6, 1980, 3046036
Int. Cl.³ C09J *5/02*; B31B *1/14*; B65D *33/02*
U.S. Cl. 156—308.4 **5 Claims**



1. A method for welding together the free edges of the inner layer of a multi-layer paper sack, wherein the sack is of the type consisting of front and back paper sheets the edges of which define two opposing outer faces, an open mouth extending transversely between the longitudinal side edges of said outer faces, and a closed bottom extending between the side edges of said outer faces in spaced relation to said open mouth, said sack further including a pair of inner sheets that are disposed in facing relation to one another between said front and back paper sheets, said inner sheets having transverse edges which are disposed adjacent the open mouth of the sack and comprising a heat weldable material adjacent at least said transverse edges, the outer face of said sack defined by said back paper sheet extending in a longitudinal direction relative to the bottom of the sack beyond said open mouth and beyond said transverse edges of said inner sheets to define a closure flap which normally overlies said transverse edges of said inner sheets, said method including the step of folding the closure flap portion of said back paper sheet away from said inner sheets along a fold line which extends in a transverse direction between the longitudinal side edges of the sack and which transverse fold line is located between the bottom of the sack and the said transverse edges of said inner sheets thereby to fully expose said transverse edges of said inner sheets, and, with the said closure flap in its said folded back position, thereafter applying heat directly to said exposed transverse edges of said pair of inner sheets thereby to weld together the inner surfaces of said inner sheets along a region which extends in a transverse direction across the inner layer of said sack.

4,353,771

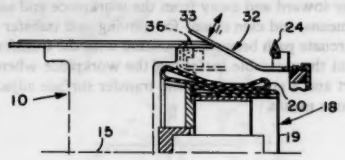
PLY DOWN ASSEMBLY FOR TIRE BUILDING MACHINE

Gerald J. Yuhas, Quincy, Ill., assignor to NRM Corporation, Akron, Ohio

Filed Dec. 8, 1980, Ser. No. 214,123
Int. Cl.³ B29H *17/22*
U.S. Cl. 156—403 **22 Claims**

1. A ply down assembly for a tire building machine comprising a metal L-shape ring including an axially extending leg, a plastic ring secured to said metal ring and including an axially extending surface cooperating with said axially extending leg,

spring fingers secured between said leg and said surface, said ring including finger retaining means which permit removal or insertion of said fingers upon flexure of said fingers without disassembly of said plastic and metal rings.



4,353,772

APPARATUS FOR WINDING FORCE TRANSMITTING ELEMENTS OF FIBER REINFORCED MATERIALS

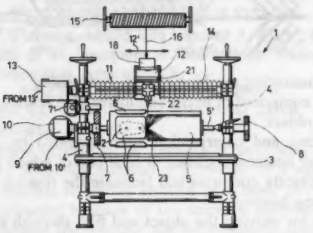
Josef Groeber, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,594

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005654

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—433 4 Claims



1. An apparatus for winding force transmitting elements having a given thickness and made of uni-directional fiber strands of a fiber reinforced material, comprising a machine frame, winding carrier means mounted for rotation on said machine frame, a plurality of winding cores distributed and arranged about the circumference of the winding carrier means, fiber strand supply means for supplying fiber strands to said plurality of winding cores, fiber strand impregnating means operatively arranged for impregnating a fiber strand on its way to said winding cores, said fiber strand supply means being mounted for translation on said machine frame, a plurality of fiber strand holding and guide elements (23) on said winding carrier means, first drive means for translating said fiber strand supply means relative to the machine frame and relative to the winding carrier means, second drive means for rotating said winding carrier means relative to the machine frame and relative to said fiber strand supply means, and wherein each winding core of said plurality of winding cores comprises an inner core member (6) secured to said winding carrier means, said inner core member having a thickness corresponding to said given thickness of the respective force transmitting element, and removable outer cover means (25) secured to said inner core member (6) on a side thereof facing away from said winding carrier means, whereby a winding space is defined between said cover means and said winding carrier means and by said inner core member therebetween, and control means operatively connected to said drive means for controlling the respective motion of the winding carrier means (5) and fiber strand supply means (12) relative to each other in such a manner that each winding on each winding core is formed as a closed loop from a single fiber strand in said winding space in a removable manner.

4,353,773

DEVICE FOR LIFTING LETTER FLAPS

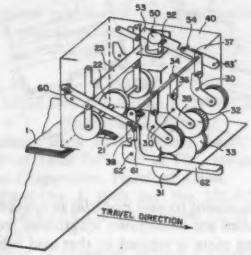
Horst Denzin, Berlin, Fed. Rep. of Germany, assignor to Francotyp GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,320

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948929

Int. Cl.³ B29H *9/00*

U.S. Cl. 156—442.1 4 Claims



1. Device for lifting letter flaps for moistening in letter feeding and/or letter sealing machines, comprising a device for separating letters from a stack having separators and eccentric wheels disposed below said separators, a transport cylinder following said separating device in transport direction of the letters and having a cut formed substantially in the middle thereof, first, second and third pressure rollers disposed above said transport cylinder, said first pressure roller being adjustably insertable into said cut for stiffening letters of different thicknesses by bending them in the longitudinal direction thereof in conjunction with said second and third pressure rollers and for lifting the letter flaps, a common lever arm being adjustable for raising and lowering said separators above said eccentric wheels and for raising and lowering said pressure rollers above said transport cylinder for letters of different thicknesses, and a knob having detent steps formed on the periphery thereof in spiral fashion for adjusting said lever arm.

4,353,774

APPARATUS FOR FORMING TUCKS IN A PIECE OF MATERIAL AND FOR SECURING THOSE TUCKS BY A HEAT-SEALED REINFORCEMENT

Andre Zaehringer, Strasbourg-Meinau, France, assignor to Vestra-Union, S.A., Paris, France

Filed Feb. 3, 1981, Ser. No. 231,153

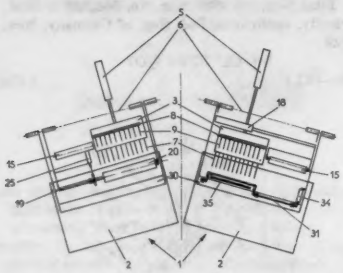
Claims priority, application France, Feb. 6, 1980, 80 02892

Int. Cl.³ B32B *31/20*; D05B *35/08*

U.S. Cl. 156—443 7 Claims

1. Apparatus for forming tucks in a piece of material and for securing said tucks by means of a heat-sealed reinforcement, comprising a flat work table, a lower set of spaced needles, an upper set of spaced needles, means for sliding said sets of needles endwise above the work table, means for moving the upper set of needles vertically relative to the lower set of needles to form tucks in a piece of flexible material disposed on the work table between said sets of needles, means for releasably securing said material to the work table, a double-faced heating plate having a first substantially flat face and a second face having a plurality of slots therein that have the same spacing as the lower set of needles, and means for moving said heating plate toward and away from said needles and for turning said heating plate so that one or the other of said faces thereof confronts said lower set of needles, whereby when a piece of said material is disposed between said sets of needles

and said needles are so positioned as to form tucks in the material and said heating plate is rotated so that said slots confront the material, and a heat-sealable reinforcement is disposed between said material and said heating plate and said heating plate is pressed against said heat-sealable reinforcement, said heat-sealable reinforcement will be bonded to said material in the regions of said first set of needles so as to bond said heat-



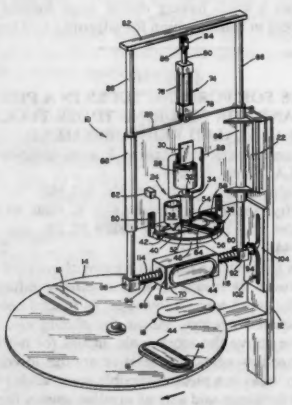
sealable reinforcement to said material in spaced regions, and when said needles are withdrawn lengthwise from said tucks and said heating plate is rotated so that said substantially flat face confronts the material and said substantially flat face is moved toward and against said heat-sealable reinforcement to press said material against said work table, said material is bonded to said heat-scalable reinforcement between said spaced regions.

4,353,775

APPARATUS FOR APPLYING GASKET-FORMING MATERIAL TO WORKPIECES

William A. Paul, 2338 Townley Rd., Toledo, Ohio 43614

Continuation-in-part of Ser. No. 90,466, Nov. 1, 1979, Pat. No. 4,273,607. This application Jun. 10, 1981, Ser. No. 272,115
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.
Int. Cl.³ B44C *1/00*
U.S. Cl. 156—540 **16 Claims**



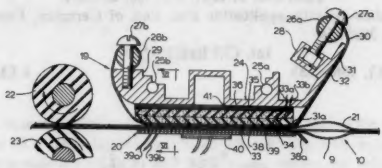
1. Apparatus for applying a bead of gasket-forming material in a pattern of predetermined size and shape to a mateable surface of a workpiece, said apparatus comprising a source of gasket-forming material, a transfer member having a transfer surface conforming to the mateable surface of the workpiece to which the bead of gasket-forming material is to be applied, applicator means for applying gasket-forming material to said transfer surface of said member from said source in the shape of the bead to be applied to the mateable surface, means for supporting the workpiece, means for moving said transfer member toward and away from the workpiece and said applicator means, and cam means for moving said transfer member in an arcuate path between a position with the transfer surface adjacent the mateable surface of the workpiece when on said support and a position with the transfer surface adjacent said applicator means.

4,353,776

LAMINATING MACHINE WITH WRINKLE PREVENTION SYSTEM

Joseph D. Giulie, Palo Alto, Calif., and Michael K. Sabo, Glenview, Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Dec. 18, 1980, Ser. No. 217,655
Int. Cl.³ B30B *15/34*
U.S. Cl. 156—555 **20 Claims**



1. A laminating machine system, comprising:

a packet comprised of upper and lower heat reactivatible films on an object;

a heating and comrpession zone provided by upper and lower heater assemblies, at least one of which is movable to directly compress and laminate the film on the object during heating;

means for moving the object and film through the heating and compression zone in a feed direction between the heater assemblies;

at least one of said heater assemblies having means for creating a substantially constant pressure profile formed of increased pressure on a central portion of the top and bottom films upon entry into and throughout movement of the entire packet through the heating and compression zone so as to prevent wrinkling or creasing of the film during laminating by creating a wave front which causes the film to spread out evenly during passage through the heating and compression zone; and

said means for creating increased pressure comprising a tapering member positioned on the one heater assembly for contacting the top or bottom film, said tapering member having a decreasing thickness from a central portion outwardly in a direction perpendicular to the feed direction.

4,353,777

SELECTIVE PLASMA POLYSILICON ETCHING

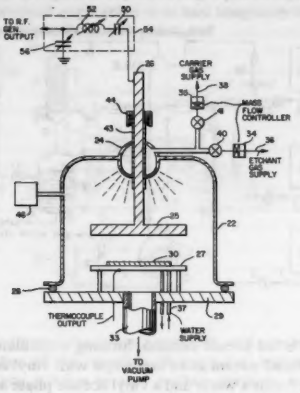
Adir Jacob, Framingham, Mass., assignor to LFE Corporation, Clinton, Mass.

Filed Apr. 20, 1981, Ser. No. 255,495
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—643 **6 Claims**

1. Process for selectively etching polysilicon material comprising the steps of:

(a) placing polysilicon material within a reactor chamber, and

(b) exposing said polysilicon material within the chamber to a gas plasma at a pressure between 50 and 150 microns Hg



for etching, wherein said gas plasma consists essentially of RF discharge $CFCl_3$.

4,353,778

METHOD OF ETCHING POLYIMIDE

Jonathan P. Fineman, Alburg, and Leonard A. Kieny, Jr., Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1981, Ser. No. 299,370

Int. Cl.³ B29C *17/08;* **C03C** *15/00, 25/06*

U.S. Cl. 156—644 **6 Claims**

1. A method of etching an opening in polyimide material wherein the polymide material is provided in a sufficiently uncured condition to permit etching by a basic etchant, and wherein a selected location of the uncured polyimide is exposed for etching the opening, the improvement comprising:

etching said polyimide at the desired location with a basic reagent to provide the opening in the polyimide,

some of said etchant being absorbed by a layer of polyimide material surrounding said opening but remaining in place,

curing the polyimide to a sufficient extent to prevent any etching of the polyimide free of absorbed etchant, and

etching the exposed location a second time with a basic reagent and remove the layer of polyimide having absorbed etchant, whereby the material surrounding the opening after the second etch is rednered free of absorbed etchant.

4,353,779

WET CHEMICAL ETCHING OF III/V SEMICONDUCTOR MATERIAL WITHOUT GAS EVOLUTION

John X. Przybysz, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 292,977

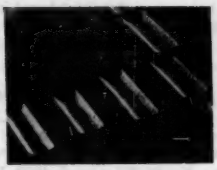
Int. Cl.³ H01L *21/312*

U.S. Cl. 156—659.1 **10 Claims**

7. A method of etching a III/V semiconductor material comprising the steps of:

(A) applying a photo-resist mask on the body of the semiconductor material in a predetermined, and pattern

(B) applying to the semiconductor material an etching solution consisting essentially of: 20 vol.% to 90 vol.% of phosphoric acid solution; 15 vol.% to 80 vol.% of hydrogen peroxide solution; 0 vol.% to 60 vol.% of water; and an amount of fluorine ion effective to provide at least 0.01 mole of fluorine ion per liter of solution, said etching solution having a pH of between about 0.5 and 4, to etch



the unmasked portion of the semiconductor without evolving a gaseous product.

4,353,780

CHEMICAL MILLING OF HIGH TUNGSTEN CONTENT SUPERALLOYS

Robert E. Fishter, Boca Raton; Henry Lada, and Brian A. Manty, both of Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 1, 1980, Ser. No. 192,667

Int. Cl.³ C23F *1/00;* **C09K** *13/08*

U.S. Cl. 156—664 **5 Claims**

1. The method of chemical milling a superalloy having a base metal selected from the group consisting of nickel and cobalt, and a tungsten content of greater than 6 weight percent, which comprises the use of the etchant consisting essentially by volume percent of 40–60 concentrated HNO_3, 0.3–0.8 concentrated HF, and 30–70 H_2O, together with at least 0.008 moles/liter $CuSO_4$ and 0.0016–0.025 moles/liter $FeCl_3$.

4,353,781

DEVICE AND PROCESS FOR COOLING LIQUIDS CONTAINING SOLIDS

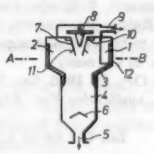
Edgar Muschelknautz, Leverkusen, and Rudolf Juse, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Erdolchemie Gesellschaft, Cologne, both of, Fed. Rep. of Germany

Division of Ser. No. 886,495, Mar. 14, 1978, Pat. No. 4,219,380, which is a continuation of Ser. No. 775,212, Mar. 7, 1977, abandoned, which is a continuation of Ser. No. 681,923, Apr. 30, 1976, abandoned, which is a continuation of Ser. No. 506,626, Sep. 16, 1974, abandoned. This application Aug. 15, 1979, Ser. No. 66,737

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1973, 2361236

Int. Cl.³ B01D *1/00*

U.S. Cl. 159—2 R **12 Claims**



1. A cyclone for the flash evaporation of liquids-containing solids which consists essentially of an inlet chamber, a separating part, a feed delivery pipe axially opening into a suddenly enlarged opening of the inlet chamber and wherein the cross-section of the inlet chamber is 5 to 30 times greater than that of the feed delivery pipe, wherein the inlet chamber is tangentially attached to said separating part and said separating part comprises a ring chamber to which said inlet chamber is connected and below which there is a separating cylinder of

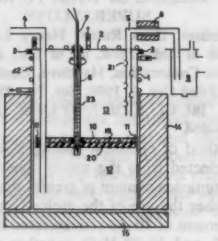
smaller diameter, said separating chamber having therebeneath a funnel-shaped member, said separating part having an inverted conical surface connecting said ring chamber and said separating cylinder, said inlet chamber before opening into the ring chamber being continuously reduced in width and continuously increased in height.

4,353,782

METHOD OF SOLID-STATE PYROLYSIS OF ORGANIC POLYMERIC SUBSTANCES

Bernhard Lersmacher, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 82,395, Oct. 5, 1979, Pat. No. 4,287,025.
This application May 1, 1981, Ser. No. 259,711
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843676
Int. Cl.³ C01B *31/02*; C10B *47/16, 53/00*
U.S. Cl. 201—25 1 Claim



1. In the method of converting natural and synthetic organic polymeric substances into vitreous carbon by solid-state pyrolysis by heating said polymeric substances under given temperature/time conditions in a non-oxidizing atmosphere in a reaction vessel the improvement wherein the reaction vessel is divided into a lower part and an upper part, the polymeric substance is positioned in the lower part and is heated under quasi-isothermal conditions, and the atmosphere, in the upper part of the reaction vessel, is heated in a manner so as to provide a temperature that decreases in the upward direction and the volatile decomposition products formed during the pyrolysis are condensed and evaporated again in the upper part of the reaction vessel.

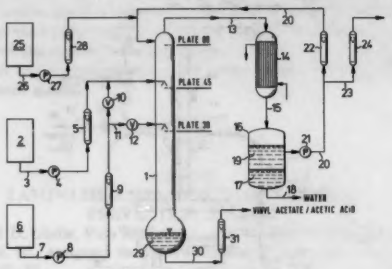
4,353,783

PROCESS FOR SEPARATING WATER FROM MIXTURES THEREOF WITH VINYL ACETATE AND ACETIC ACID

Günter Roscher, Kelkheim; Karl-Heinz Schmidt, Idstein; Horst Langner, Hattersheim am Main; Hermann Neu, Neu-Isenburg; Aladar Lienerth, Kelkheim; Dominik Dempf, Mehring-Öd, and Klaus Kaiser, Burghausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,752
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943985
Int. Cl.³ B01D *3/36*
U.S. Cl. 203—14 2 Claims

1. In a method for the manufacture of vinyl acetate by gaseous phase reaction of ethylene with acetic acid and oxygen in the presence of a catalyst containing palladium, or compounds thereof, to form a gaseous mixture of acetic acid, vinyl acetate, water, carbon dioxide and ethylene as main components wherein said gaseous mixture is condensed to form a condensate containing the major amount of acetic acid, vinyl acetate and water present in said gaseous mixture and absorbing the residual amount of vinyl acetate and water in said gaseous mixture in acetic acid to form an acetic acid solution, the method which comprises feeding separately the condensate and the acetic acid solution to a separation column containing 50 to 80 trays said condensate being fed thereto at a point located 4 to 30 trays above that point at which said acetic acid



solution is fed to said column, forming a distillate of water in the overhead stream as an azeotrope with vinyl acetate which distillate forms a water and a vinyl acetate phase and removing the water phase therefrom.

4,353,784

METHOD OF RECOVERY OF ACETIC ACID

Kunio Koga, Ohimachi, and Ryoichi Kishimoto, Sakai, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Sep. 21, 1981, Ser. No. 304,145
Int. Cl.³ B01D *11/04*; C07C *51/44, 51/48*
U.S. Cl. 203—16 13 Claims

1. A method of recovering acetic acid by extracting an acetic acid-containing aqueous solution with an organic extracting agent and subjecting the extract to distillation, said method comprising the first step of performing extraction by using a tertiary amine having a boiling point higher than that of acetic acid and being capable of forming a non-aqueous phase as the organic extracting agent in combination with an oxygen-containing, high-boiling-point organic solvent selected from the group consisting of di-isobutyl carbinol, isophorone, methyl benzoate, tributyl phosphate, 3,3,5-trimethylcyclohexanone and 2-ethoxyethyl acetate, the second step of performing dehydration by subjecting the extract to distillation, and the third step of subjecting the dehydrated mixture to distillation in a reduced pressure distillation column at a column bottom temperature of 120° to 170° C. to distill acetic acid and separate it from the organic extracting agent.

4,353,785

METHOD OF AND APPARATUS FOR WIRE-CUT MACHINING WORKPIECES OF NON-PLANAR SURFACE CONTOURS

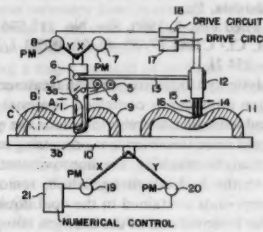
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Sep. 13, 1979, Ser. No. 75,231
Claims priority, application Japan, Sep. 26, 1978, 53/118458
Int. Cl.³ B23P *1/00, 1/12*
U.S. Cl. 204—129.2 10 Claims

1. A method of the wire-cut machining of a workpiece having a non-planar surface contour with a thin, continuous elongate tool traveling between a pair of tool-positioning and machining guide members from a supply side to a take-up side and adapted to traverse, between said guide members and through said workpiece, the workpiece transversely to said surface contour, the method comprising the steps of:

sensing an imaginary plane which is tangent to said surface contour of the workpiece at any point thereon to be successively substantially intersected by the axis of said traveling elongate tool;

automatically, in response to the sensing of said imaginary plane of said surface contour, orienting the axis of said traveling elongate tool traversing the workpiece at a predetermined angle relative to said imaginary tangential plane substantially at said point; and



automatically maintaining substantially said predetermined orientation of the traveling elongate tool traversing said workpiece relative to said surface contour, in spite of change in the tangential plane from point to point relative to a fixed plane, throughout a substantial portion of the entire machining operation.

4,353,786

ELECTROLYTIC SILVER TARNISH REMOVAL METHOD

Jan de Jager, DE Meern, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 22, 1981, Ser. No. 276,390
Int. Cl.³ C25F *1/00*
U.S. Cl. 204—144 **5 Claims**

1. A method of removing silver sulfide from silver articles comprising forming a solution comprising 1.4 to 5.0% of sodium carbonate, 0 to 3.0% of a nonionic surfactant and water; the solution having a pH of greater than 10; contacting the solution with an aluminum anode; and contacting the silver articles to be cleaned with both the anode and the solution to form an electrolyte cell; the improvement which comprises incorporating from 0.6 to 2.5% by weight of sodium sulfite into the solution.

4,353,787

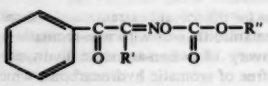
PHOTO CURABLE POLYESTER WITH BENZOYL OXIME CARBONATE, PHOTO REDUCIBLE DYE (EOSIN), AND A BENZYL AMINE

Ian J. Alexander, and Roger J. Scott, both of Wellingborough, England, assignors to Scott Bader Company Limited, Northamptonshire, England

Continuation of Ser. No. 107,779, Dec. 28, 1979, abandoned.
This application May 21, 1981, Ser. No. 265,916
Claims priority, application United Kingdom, Jan. 11, 1979, 7901117
Int. Cl.³ C08F *2/46*; C08L *67/06*
U.S. Cl. 204—159.15 **21 Claims**

1. A visible-light curable unsaturated polyester resin composition comprising

(a) at least one benzoyl oxime carbonate ester of the formula



wherein R' and R'' are members of the group consisting of alkyl, aryl and aralkyl; and

(b) at least one photo-reducible dye; and

(c) at least one N,N-disubstituted benzylamine reducing agent.

4,353,788

RF SPUTTERING FOR PREPARING SUBSTANTIALLY PURE AMORPHOUS SILICON MONOHYDRIDE

Frank R. Jeffrey, and Howard R. Shanks, both of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,410
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 S **6 Claims**

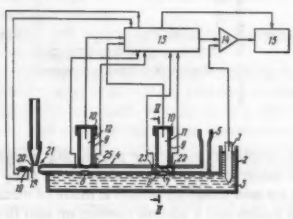
1. A process for producing substantially pure amorphous silicon monohydride by reactive rf sputtering of a silicon target, comprising providing a chamber with an amorphous silicon target and a substrate therein, positioning said substrate and said target such that the adjacent edges of the substrate and the target are within about 2 cm, providing a partial pressure of hydrogen of at least 10^{-3} torr to said chamber, providing argon to said chamber, reducing the pressure in said chamber to a value sufficient to maintain a sputtering plasma therein, and applying rf power to the silicon target to provide a power density of not less than about 15 watts per square inch to sputter substantially pure amorphous silicon monohydride onto said substrate while maintaining said partial pressure of hydrogen.

4,353,789

GAS-LIQUID ANALYZER

Chingiz M. O. Kashkai, ulitsa Azizbekova, 8, kv. 6, Baku, U.S.S.R.

Filed Jun. 23, 1981, Ser. No. 276,591
Claims priority, application U.S.S.R., Feb. 5, 1981, 2965818
Int. Cl.³ G01N *27/28, 27/30*
U.S. Cl. 204—195 R **9 Claims**



1. A gas-liquid analyzer comprising:

a bath;

electrolyte filling up said bath;

a reference electrode immersed in said electrolyte;

a potentiometer having first and second inputs and outputs, the first input thereof being connected to said reference electrode;

a switching unit having a first group of inputs, a second group of inputs, first, second, third and fourth outputs, said first output thereof being connected to said second input of said potentiometer;

a potential corrector having first and second inputs, said first and second inputs thereof being connected with said output of said potentiometer and said second output of said switching unit, respectively;

a sample conveying assembly;

a capillary tube of said sample conveying assembly having a wall, an inlet end, and an outlet end, the capillary tube being arranged to overlie said bath; the capillary tube further comprising first and second rows of openings arranged in opposition in said wall;

a group of porous inserts of said sample conveying assembly

located in said openings of said first row of openings and adapted to intimately contact said electrolyte;

a sample displacement means of said sample conveying assembly, the sample displacement means being disposed in close proximity to said outlet end of said capillary tube and connected with said third and fourth outputs of said switching unit;

a group of ion-selective electrodes equal in number to the number of said porous inserts and hermetically secured in said openings of said second row of openings, each of the electrodes being connected to one of said inputs of said first group of inputs of said switching unit;

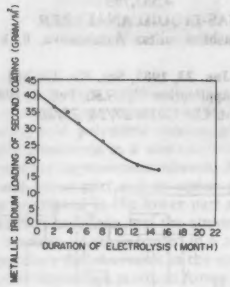
said sample under analysis which is introduced into said inlet end of said capillary tube adapted during displacement thereof to alternately contact with one of said ion-selective electrodes and one of said porous inserts positioned to face such ion-selective electrode.

4,353,790

INSOLUBLE ANODE FOR GENERATING OXYGEN AND PROCESS FOR PRODUCING THE SAME

Hideo Kanai; Akihiro Shinagawa, both of Maebashi; Takahiko Yamazaki, Shibukawa, and Reiichi Itai, Maebashi, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,290
Claims priority, application Japan, Feb. 20, 1980, 55-19904
Int. Cl.³ C25B *11/08, 11/10;* B05D *5/12*
U.S. Cl. 204—290 F 8 Claims



1. An insoluble anode for generating oxygen which comprises a substrate made of titanium or an alloy thereof, a first coating on said substrate which is made of metallic bismuth or bismuth oxides and a second coating on said first coating layer which is made of metallic iridium and iridium dioxide, said second coating containing 5 to 50 mol% of metallic iridium.

4,353,791

HYDROTREATING CATALYST AND LIQUEFACTION OF COAL

Regis J. Pellet, Tarrytown, N.Y., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 27, 1981, Ser. No. 238,936
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 6 Claims

1. In the process of the hydroconversion of coal solids to liquid and gaseous products comprising contacting the coal solids, gas containing molecular hydrogen and catalyst solids in a fuel reaction zone at elevated temperatures and pressures at which a major portion of said coal solids undergo hydroconversion to gaseous and liquid products, the improvement comprising using a hydrotreating catalyst composition comprising particles of Component A consisting essentially of at least one Group VIB metal component supported on refractory inorganic oxide and particles of Component B consisting essentially of either cobalt and/or nickel component supported on refractory inorganic oxide.

4,353,792

PROCESS TO UPGRADE COAL LIQUIDS BY EXTRACTION PRIOR TO HYDRODENITROGENATION

Abraham Schneider, Overbrook Hills, Pa.; Elmer J. Hollstein, Wilmington, Del.; Edward J. Janoski, Havertown, and Edward G. Scheibel, Media, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Feb. 1, 1980, Ser. No. 117,596
Int. Cl.³ C10G *17/00, 45/00;* B07B *1/34*
U.S. Cl. 208—254 H 6 Claims

1. In a catalytic hydrodenitrogenation treatment for conversion of nitrogen compounds contained in a coal liquid to hydrocarbons and ammonia, thereby to reduce the nitrogen level of the coal liquid prior to subsequent processing such as hydrocracking or catalytic cracking, the improvement which comprises, prior to the hydrodenitrogenation, removing oxygen and other compounds contained in the coal liquid, thereby to obtain a greater removal rate of the nitrogen compounds in the hydrodenitrogenation than that obtained in hydrodenitrogenation of the coal liquid without prior removal of said compounds, said removal comprising extracting the coal liquid with an extractant selected from aqueous methanol or a mixture of a dialkylformamide and a paraffinic hydrocarbon.

4,353,793

METHOD FOR REMOVING POLYHALOGENATED HYDROCARBONS FROM NONPOLAR ORGANIC SOLVENT SOLUTIONS

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,760
Int. Cl.³ C07C *7/10;* C10G *19/02, 21/16*
U.S. Cl. 208—262 6 Claims

1. A method of treating a PCB contaminated solution of a substantially inert organic solvent having a concentration of polyhalogenated aromatic hydrocarbon at up to 1% by weight to reduce the polyhalogenated aromatic hydrocarbon concentration to less than 50 ppm, which comprises, agitating a mixture at a temperature of 25° C. to 200° C. comprising such substantially inert organic solvent solution of polyhalogenated aromatic hydrocarbon, monocapped-polyalkyleneglycol alkyl ether and alkali metal hydroxide for a time which is at least sufficient to effect the minimum aforedescribed reduction in concentration of the polyhalogenated aromatic hydrocarbon in the agitated mixture which comprises by weight,

(A) up to 1% of polyhalogenated aromatic hydrocarbon,

(B) about 0.1 to 10% of monocapped-polyalkyleneglycol alkyl ether,

(C) about 0.1 to 10% of alkali metal hydroxide, and

(D) about 80 to 99.8% of substantially inert organic solvent, where the sum of (A)+(B)+(C)+(D) is equal to 100%.

4,353,794

PROCESS FOR THE SOLVENT EXTRACTION OF AROMATICS AND THE RECOVERY OF AN AROMATICS-FREE NON-AROMATIC PRODUCT FROM A HYDROCARBON FEEDSTOCK

George R. Winter, III, Mt. Prospect; William H. Maier, Hoffman Estates, and K. N. Srinivas Prabhu, Arlington Heights, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 26, 1980, Ser. No. 210,633
Int. Cl.³ C10G *21/00, 21/06, 21/28*
U.S. Cl. 208—321 6 Claims

1. A process for the solvent extraction of aromatic hydrocarbons from a mixture thereof with non-aromatic hydrocarbons and the recovery of a non-aromatic hydrocarbon fraction substantially free of aromatic hydrocarbons, which comprises the steps of:

(a) treating said mixture in a first extraction zone in contact with a water-soluble, aromatics-selective solvent at conditions to provide an aromatics-rich solvent stream and a

first raffinate stream comprising non-aromatic hydrocarbons and residual solvent;

(b) treating said aromatics-rich solvent stream in a first separation zone at conditions to separate substantially all of the residual non-aromatic hydrocarbons retained therein;

(c) treating the resulting aromatics-rich solvent stream in a first solvent recovery zone in contact with stripping steam at conditions to provide a high purity aromatics stream and a lean solvent stream;

(d) recycling a major portion of said lean solvent stream to said first extraction zone, and recovering said high purity aromatics stream;

(e) treating a minor portion of said lean solvent stream in a second solvent recovery zone in contact with stripping steam at conditions to provide a lean solvent stream substantially free of residual aromatics for use in accordance with step (h);

(f) treating the raffinate stream recovered from said first extraction zone in a second separation zone at conditions to provide a bottoms fraction comprising the higher boiling non-aromatic components and residual solvent as a second raffinate stream, and an overhead fraction comprising the lower boiling non-aromatic component as a third raffinate stream;

(g) treating said second raffinate stream in contact with an aqueous stream in a second water-wash zone at conditions to separate a solvent-containing aqueous stream and recover said second raffinate stream substantially solvent-free;

(h) treating said third raffinate stream in a second extraction zone in contact with the lean solvent stream provided pursuant to step (e) at conditions to extract residual aromatic hydrocarbons contained therein; and,

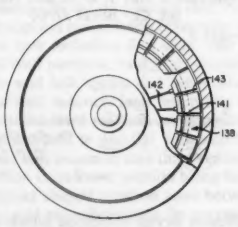
(i) treating the resulting raffinate stream in contact with an aqueous stream in a first water-wash zone at conditions to separate a solvent-containing aqueous stream and recover said third raffinate stream substantially free of aromatic hydrocarbons.

4,353,795

FIELD FLOW FRACTIONATION CHANNEL

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1981, Ser. No. 249,963
Int. Cl.³ B03B *5/62*
U.S. Cl. 209—155 **10 Claims**



1. In an apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein:

said channel comprises an outer support ring and a continuous inner channel ring mating with said support ring to define said channel,

said channel ring having a tension modulus capable of following centrifugally induced expansions of said support ring, and

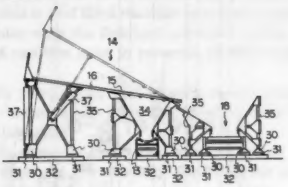
means to load said channel ring to follow said expansion.

4,353,796

APPARATUS FOR DIGGING AND TRANSPORTING SOIL AND SAND, STONES AND ROCKS, MINERALS AND THE LIKE

Masaaki Kubo, Musashino; Yasutaka Onodera, Kawaguchi; Hiroshi Kawaguchi, Tokyo, and Masaharu Sibata, Kawaguchi, all of Japan, assignors to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 925,606, Jul. 17, 1978, Pat. No. 4,261,119. This application Oct. 10, 1980, Ser. No. 195,954
Claims priority, application Japan, Jul. 22, 1977, 52/87303
Int. Cl.³ B07B *1/00*
U.S. Cl. 209—240 **6 Claims**



1. Apparatus for transporting soil and sand, rocks and stones, minerals or the like dug by a dragline, said apparatus including a hopper means straddling a conveyor means for transferring the material dug, said hopper means comprising a pair of opposed side walls extending parallel to the longitudinal axis of said conveyor means, the walls defining an upper opening for receiving the material dug and sloping downwardly inwardly toward the conveyor means to form therebetween a lower discharge opening through which the dug materials are deposited onto the conveyor means;

a pair of opposed end walls extending transversely to the length of the conveyor means;

a sieve means extending across said upper opening for separating relatively large masses from said dug material;

a dug material receiving solid plate forming a part of said opposed side wall to define said upper opening for receiving the material dug, said solid plate being associated with said sieve means and adapted to slope down the dug material and transfer it to the sieve means;

and support means for supporting at least said side walls, said support means including fixing legs provided with jack support portions for supporting jacks operable to lift said fixing legs, a wheel being rotatably mounted to each of said fixing legs, whereby when said hopper means is shifted to another location along said conveyor means said jacks are actuated to lift said fixing legs and said wheels are brought into contact with rails to ride therealong, and during the loading of said dug material into the hopper means said jacks are deenergized to lower the bottoms of said fixing legs into contact with the ground while said wheels are disengaged from the rails.

4,353,797

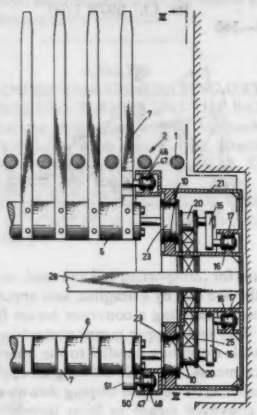
DEVICE FOR PURIFYING LIQUIDS, PARTICULARLY WATER

Andre Verbandt, 130, Parmentierlaan, Knokke, Belgium

Filed Mar. 5, 1981, Ser. No. 240,975
Claims priority, application Belgium, Mar. 13, 1980, 199787
Int. Cl.³ B01D *35/16*
U.S. Cl. 210—159 **13 Claims**

1. Device for purifying liquids, more particularly water, with a grate comprised of bars in parallel relationship with one another which can be arranged cross-wise in a liquid stream,

with the grate top portion projecting out of said liquid up to a discharge chute or similar, wherein on the back side of the grate bars is mounted at least one toothed beam which extends substantially in parallel relationship with said grate at right angle to the lengthwise direction of the grate bars, and which is drivably led in said lengthwise direction substantially over the whole grate height in a closed circle with a rising run and a falling run, in such a way that the teeth project through the grate bars during the rising run, and on at least one end of said beam lever means are provided with at least two discrete bearings, at least the one bearing lying outside the beam rotation axis, said bearings moving in two different guideways, said ways each having two approximately straight portions substantially in parallel relationship with said grate and two arc-shaped portions connecting said straight portions together to



form two closed continuous ways, said guideways being so arranged relative to one another that the teeth undergo at the beginning of said falling run, a backwards swinging to an inoperative position over at least some determined distance of said falling run to then at the transition from the falling run to the rising run, and undergo a further swinging from said inoperative position in the same direction to an operative position wherein said teeth project anew during the rising run through said grate, whereby during said rising run, the one bearing leads relative to the other bearing and the conditions are reversed during the falling run, in such a way that said reversal occurs on the arc-shaped portions of said guideways, and antijamming means for always moving both bearings together in the balk translation direction to prevent jamming of said bearing during both said tooth swingings as said bearing moves in said closed circle.

4,353,798

APPARATUS FOR REMOVING POLYCHLORINATED BIPHENYLS FROM CONTAMINATED TRANSFORMER DIELECTRIC LIQUID

Stephen D. Foss, Pittsfield, Mass., assignor to General Electric Company

Division of Ser. No. 151,152, May 19, 1980, Pat. No. 4,299,704. This application Jun. 1, 1981, Ser. No. 268,976

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—181 **2 Claims**

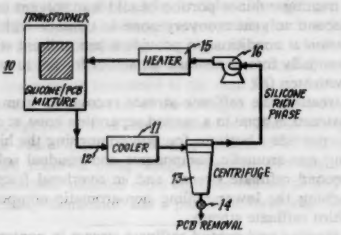
1. A system for removing polychlorinated biphenyl (PCB) from a silicone dielectric fluid contained in a power transformer tank, said system comprising, in combination:

a separator tank;

conduit for conveying silicone dielectric fluid from the transformer tank for introduction into the upper portion of said separator tank;

a valve for controlling the flow of silicone dielectric fluid from the transformer tank into said separator tank;

means physically associated with one of said conduit and said separator tank for cooling the silicone dielectric fluid, whereby to reduce the solubility of PCB in silicone dielectric fluid and thus create in said separator tank a two-phase system consisting of a silicone rich mixture and a PCB rich mixture, said PCB rich mixture settling to the lower portion of said separator tank due to the higher specific gravity of PCB relative to silicone dielectric fluid;



valved outlet in the bottom of said separator tank for controllably removing said PCB rich mixture;

fluid handling means including conduit and a pump for conveying said silicone rich mixture from said separator tank back into the transformer tank; and

a heater physically associated with said fluid handling means for heating said silicone rich mixture up to the approximate temperature of the silicone dielectric fluid contained in the transformer tank.

4,353,799

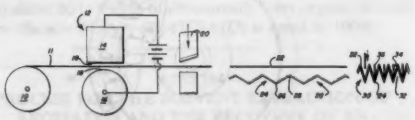
HYDROPHOBIC DIFFUSION MEMBRANES FOR BLOOD HAVING WETTABLE SURFACES

Ronald J. Leonard, Harvard, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 687,590, May 19, 1976, abandoned. This application May 1, 1978, Ser. No. 901,945

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **31 Claims**



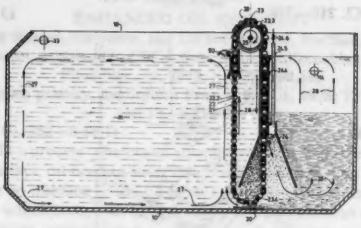
10. In a diffusion device for blood which comprises membrane support means overlaid with a diffusion membrane comprising hydrophobic material, said diffusion device defining a first flow path for one fluid along one side of the diffusion membrane, and a second flow path for another fluid along the other side of the diffusion membrane, the improvement comprising: said hydrophobic diffusion membrane defining a large number of pores of no more than five microns in diameter, and a corona discharge-created, hydrophilic outer surface exhibiting a surface tension of at least 50 dynes/cm., whereby said membrane exhibits less platelet attachment in contact with blood, when compared with a corresponding, hydrophobic diffusion membrane which has not been treated with a corona discharge.

4,353,800

METHOD AND AN APPARATUS FOR BIOLOGICAL TREATMENT OF WASTE WATERS

Ferdinand Besik, 3243 Chokecherry Crs., Mississauga, Ontario, Canada (L5L 1B1)

Filed Aug. 25, 1980, Ser. No. 181,136
Int. Cl.[3] C02F *3/08*
U.S. Cl. 210—605 23 Claims



1. A method for treating waste waters comprising

mixing the content of a single reaction tank by single aerating means in three substantially different reaction zones, the first reaction zone being substantially without dissolved oxygen, the second reaction zone being substantially saturated with dissolved oxygen, the third reaction zone being substantially saturated with dissolved oxygen and having a fluidized bed of activated sludge therein, said aerating means comprising a pair of endless chain means arranged at opposite sides of said reaction tank, said chain means being positioned within said reaction tank with the top portion of said chain means located above the top part of said reaction tank and the bottom portion of said chain means extending near the bottom of said reaction tank, said chain means having plurality of horizontal pipe means attached to and extending between said chain means, said chain means forming with said pipe means an endless belt means, said pipe means being a chamber having openings located along their length thereof for flowing the reactor liquor out and for entering the air into said pipe means when said pipe means are located above the liquid level of the reactor mixed liquor and for release of the entrapped air from said pipe means through said openings in form of bubbles into said reactor mixed liquor when said pipe means are submerged in said reactor mixed liquor and are moving downwardly in said reaction tank, said belt means and said belt support means being rotated by motor means, said reaction tank including first solid wall partition and second solid wall partition, said first partition being positioned inside said belt means and being attached to two side walls of said reaction tank separating said reaction tank into first and third reaction zones, said second partition being positioned in parallel with said first partition alongside said belt means in said third reaction zone, said second partition in its lower portion being bent outwardly to form a funnel shaped aeration zone between said first partition and said second partition for aerating the reactor liquor, said second partition being attached to two side walls of said reaction tank and being submerged in the liquid held in said third reaction zone, said first and third reaction zones being in communication with each other under said funnel shaped aeration zone via openings formed by the bottoms of said first and second partitions, said two side walls and the bottom of said reaction tank, said belt means being arranged to move around said first partition and downwardly in the space between said first and second partitions and upwardly in said first reaction zone, said belt means recirculating the liquid from the top of said third reaction zone downwardly in the space between said first and second partitions to the bottom of said reaction tank and then upwardly through said third reaction zone to maintain a fluidized bed of sludge solids therein and said belt means being arranged to pump and disperse air into the reactor liquor in said funnel shaped aeration zone, rotate the content in said first reaction zone and circulate the reactor mixed liquor between said first reaction zone and said second reaction zone,

feeding the waste water into said first reaction zone, continuously rotating by said aerating means the content therein and contacting the waste water with activated sludge solids in the absence of dissolved oxygen therein,

continuously flowing the reactor mixed liquor by gravity and by said aerating means from said first reaction zone into said aeration zone and from said aeration zone into said third reaction zone,

continuously recirculating the reactor liquor by said aerating means from the top of said third reaction zone downward through said aeration zone, maintaining a fluidized bed of sludge solids in said third reaction zone and contacting the waste water with the fluidized activated sludge solids in said third reaction zone in presence of dissolved oxygen therein,

continuously pumping by said aerating means sludge solids and the reactor liquor from said aeration zone into said first reaction zone,

continuously pumping air by said aerating means into said aeration zone and continuously dispersing the air by said aerating means into the reactor liquor therein,

continuously flowing the reactor liquor from said third reaction zone into a clarifier for separating the sludge solids from the treated waste water,

continuously returning the separated sludge solids from said clarifier back into said reaction tank and the clarified waste water flowing out of said clarifier for further treatment or disposal, and

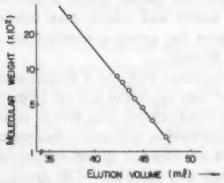
continuously withdrawing the excess sludge out of the system.

4,353,801

SPECIAL SOLVENT COLUMN FOR GPC AND GPC METHOD USING THE SAME

Yoshiyuki Mukoyama; Nobutoshi Chikazumi, both of Hitachi, and Hatuo Sugitani, Ibaraki, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,243
Claims priority, application Japan, Oct. 6, 1979, 54/129218
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—635 10 Claims



5. In a gel-permeation chromatographic method comprising passing an eluent dissolving a substance to be measured through a column packed with porous styrene-divinylbenzene type copolymer spherical particles in an immersed and swollen state with said eluent, and fractionating the substance depending on the largeness of molecular weight of said substance, the improvement which comprises using as the eluent a mixture of hexafluoroisopropanol and a chlorine-containing organic solvent in a mixing ratio of hexafluoroisopropanol to the chlorine-containing organic solvent of 5/95 to 70/30 by volume.

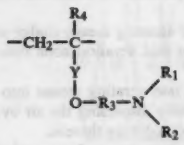
4,353,802

SEMIPERMEABLE COMPOSITE MEMBRANE

Shigeyoshi Hara; Yuzaru Hayashi; Takeyuki Kawaguchi; Noriaki Sasaki; Yutaka Taketani, and Hiroyoshi Minematsu, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 86,192
Claims priority, application Japan, Oct. 18, 1978, 53-127300
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—654 31 Claims

1. A semipermeable composite membrane comprising a thin semipermeable film of a polymeric material deposited on one side of a microporous substrate, said polymeric material being prepared by crosslinking a soluble polymer containing at least 30 mole% of a recurring unit of the formula



(I)

wherein

Y represents a direct bond, a methylene group, a carbonyl group of the formula

or an unsubstituted or substituted phenylene group;

R_1 represents a hydrogen atom, or a mono-valent organic radical containing 1 to 20 carbon atoms which may contain an amino group containing 1 to 2 active hydrogen atoms and a heteroatom selected from the group consisting of oxygen, nitrogen and sulfur atoms;

R_2 represents a hydrogen atom, an amino group containing 1 to 2 active hydrogen atoms or a monovalent oganic radical containing 1 to 20 carbon atoms and which contains at least one amino group containing 1 to 2 active hydrogen atoms and which may contain a heteroatom selected from the group consisting of oxygen, nitrogen and sulfur atoms;

R_1 and R_2, together with the nitrogen atom to which they are bonded may represent a 5- to 18-membered nitrogen-containing heterocyclic ring which contains at least one amino group having one active hydrogen atom;

R_3 represents an alkylene group containing 2 to 5 carbon atoms which may have an —OH group;

R_4 represents a hydrogen atom or a methyl group,

and having at least 0.5 milliequivalent, per gram of said polymer, of an amino group containing 1 or 2 active hydrogen atoms, with a polyfunctional compound containing at least two functional groups capable of reacting with the amino group having 1 or 2 active hydrogen atoms.

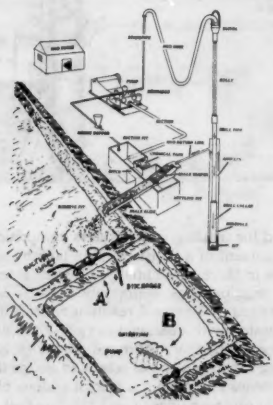
27. In a method for desalination of saline or brackish water by reverse osmosis comprising contacting the saline or brackish water under pressure with a reverse osmosis membrane, the improvement wherein the membrane of claim 1 is used as the reverse osmosis membrane.

4,353,803

LAND RESTORATION FOLLOWING OIL-WELL DRILLING AND PRODUCTS USEFUL THEREFOR

Virgil L. Dover, Jr., 501 Marie Antoinette St., Lafayette, La. 70506

Continuation-in-part of Ser. No. 17,558, Mar. 5, 1979, Pat. No. 4,234,421. This application Nov. 10, 1980, Ser. No. 205,098
The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—728 13 Claims



1. A flocculant useful for waste drilling-fluid reserve pit treating wherein the reserve pit contains an aqueous spent oil-well drilling mud including an anionic colloid selected from the group consisting of drilling-fluid grade lignosulfonate and alkaline-soluble lignite, the flocculant consisting essentially of from 24 to 49 parts by weight of aluminum sulfate per part by weight of polyacrylamide homopolymer having from 130 to 500 pendant amide groups per pendant carboxylic-acid or carboxylic-acid-salt group and having a molecular weight in the range of from 10,000 to 5 million.

7. A process of separating, into good-quality water and high-density solids, an admixture of waste drill cuttings, drilling fluid and by-products of rotary drilling which comprises combining an effective amount of flocculant according to claim 1 with the admixture, flocculating solids in the admixture and separating water from the flocculated solids.

4,353,804

IMPROVED FLUID LOSS CONTROL SYSTEM

Peter C. Green, Ellicott City, and Jacob Block, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 169,886, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 144,365, Apr. 28, 1980, abandoned. This application Feb. 27, 1981, Ser. No. 239,071
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 A 15 Claims

1. A composition capable of imparting fluid loss control to aqueous systems comprising a mixture of solid particulate materials of:

(a) a substantially water insoluble, solid, particulate silicate or alumino-silicate material which contains a major amount of kaolinite, halloysite, montmorillonite or illite or mixtures thereof, or attapulgite or sepiolite and being of a particle size such that at least about 90 percent by weight is capable of passing through a No. 20 U.S. Standard Sieve, in combination with

(b) a reaction product formed in an aqueous acidic medium having a pH of about 5.5 or lower between polyvinyl

alcohol having an weight average molecular weight of at least 20,000 with at least about 1 to 200 percent of stoichiometry of a compound containing at least one aldehyde group therein or capable of generating in an aqueous medium at least one aldehyde group;

wherein the amount of component (a) to component (b) is in the ratio of from about 0.75:1 to 3:1.

4,353,805

ENHANCED OIL RECOVERY

Horst Kragen, Carentan, and Gerard Brigand, Portbail, both of France, assignors to CECA S.A., Velizy Villacoublay, France

Filed Nov. 29, 1979, Ser. No. 98,410

Claims priority, application France, Dec. 1, 1978, 78 34021

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **4 Claims**

1. In a process wherein an aqueous medium is injected into a subsurface oil-bearing reservoir through an injection well in order to displace crude oil from said reservoir, the improvement which comprises incorporating into said aqueous medium a mixture comprising a xanthan salt of trivalent iron in an amount sufficient for increasing the viscosity of said aqueous medium and a complexant for iron which is a salt of an acid selected from the group consisting of a citric acid, tartaric acid, lactic acid, acetic acid, oxalic acid, hydrofluoric acid and ethylenediamine tetracetic acid, the ratio of iron ion equivalents to the complexant salt acid ion equivalents ranging between about 10:1 and 1.10.

3. In a process wherein an aqueous medium is injected into a subsurface oil-bearing reservoir through an injection well in order to displace crude oil from said reservoir, the improvement which comprises incorporating into said aqueous medium a mixture comprising a xanthan salt of aluminum in an amount sufficient for increasing the viscosity of said aqueous medium and a complexant for aluminum which is a salt of an acid selected from the group consisting of citric acid, tartaric acid, lactic acid, acetic acid, oxalic acid, hydrofluoric acid and ethylenedimine-tetracetic acid, the ratio of aluminum ion equivalents to the complexant salt acid ion equivalents ranging between about 10:1 and 1:10.

4,353,806

POLYMER-MICROEMULSION COMPLEXES FOR THE ENHANCED RECOVERY OF OIL

Nathan H. Canter, Edison; Max L. Robbins, South Orange, and Edward G. Baker, Berkeley Heights, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 3, 1980, Ser. No. 136,936

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **23 Claims**

1. A stabilized microemulsion system containing a polymer-microemulsion complex which comprises:

(a) a microemulsion, said microemulsion including as components

(1) an oil

(2) water having up to 25% by weight of dissolved inorganic salts and

(3) 0.2 to 15 wt.%, based on the microemulsion, of at least one anionic surfactant balanced to form the microemulsion, and

(b) from 0.1 to 10% by weight, based on the microemulsion of a polar polymer capable of forming a polymer-microemulsion complex wherein the polar polymer has a molecular weight of from 4,000 to 5,000,000 and is selected from the group consisting of branched polyethylene oxide condensation product of polyethylene oxide, bisphenol A and epichlorohydrin and polyvinyl pyrrolidone, the polymermicroemulsion complex being characterized by a complexation energy of at least 2 Kcal/mole.

4,353,807

LUBRICANTS AND FUELS CONTAINING BOROXAROPHENANTHRENE COMPOUNDS

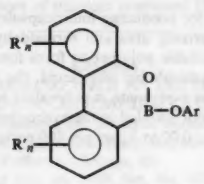
Milton Braid, Haddonfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 24, 1981, Ser. No. 247,177

Int. Cl.³ C07F *5/04*; C10M *1/10*

U.S. Cl. 252—49.6 **12 Claims**

1. A compound of the formula



wherein R' is a hydrocarbyl group containing 1 to 30 carbon atoms, n may be 0 or an integer of 1 to 4, and Ar is an aromatic moiety derived from a hindered phenol.

5. A lubricant or liquid hydrocarbon fuel composition comprising a major proportion of a lubricant or liquid hydrocarbon fuel and an antioxidant amount of the compound of claim 1.

4,353,808

PHOSPHORS AND PROCESS FOR PRODUCING THE SAME

Shinkichi Tanimizu, Kokubunji; Masaki Nakano, Hamuramachi; Teruki Suzuki, Funabashi, and Toshikatsu Manabe, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,674

Claims priority, application Japan, Mar. 30, 1979, 54/36887; Dec. 26, 1979, 54/168371

Int. Cl.³ C09K *11/477*

U.S. Cl. 252—301.4 P **41 Claims**

1. A phosphor represented by the formula:

$$a(SR_{1-x-y-z}M_x^{II}M_y^{III}Eu_z^{2+})_3(PO_4)_2.b\ M'X_2 \quad (I)$$

wherein M^{II} is at least one element selected from the group consisting of Zn, Mg, Ca and Ba; M^{III} is at least one element selected from the group consisting of Y, Gd and La; M' is at least one element selected from the group consisting of Ca, Sr and Ba; X is one or more halogens; $0 \leqq x \leqq 0.999$, $0.001 \leqq y \leqq 0.15$, $0.0015 \leqq z \leqq 0.20$ and $x+y+z \leqq 1$; and the ratio a/b is in the range of $0.3 \leqq a/b \leqq 1.2$.

29. A phosphor represented by the formula:

$$a(Sr_{1-x-y-z}M_x^{II}M_y^{III}Eu_z^{2+})_3(PO_4)_2.b\ M'X_2 \quad (I)$$

wherein M^{II} is at least one element selected from the group consisting of Zn, Mg, Ca and Ba; M^{III} is at least one element selected from the group consisting of A, Y, Gd and La; M' is at least one element selected from the group consisting of Ca, Sr and Ba; X is one or more halogens; $0 < x \leqq 0.999$, $0.001 \leqq y \leqq 0.15$, $0.0015 \leqq z \leqq 0.20$ and $x+y+z \leqq 1$; and the ratio a/b is in the range of $1.2 < a/b \leqq 3.0$, whereby said phosphor is not deteriorated by baking in air.

4,353,809

PROCESS FOR THE PRODUCTION OF MICROCAPSULES

Yoshiyuki Hoshi, and Hiroharu Matsukawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 10, 1980, Ser. No. 128,786

Claims priority, application Japan, Mar. 9, 1979, 54/27406; Jan. 22, 1980, 55/6087

Int. Cl.³ B01J *13/02*

U.S. Cl. 252—316 7 Claims

1. In a process for producing microcapsules which process comprises polymerizing urea and formaldehyde in the presence of a water-soluble polymer to form formaldehyde resin walls around a hydrophobic oily liquid, the improvement in which a polyvalent isocyanate, a polyvalent isothiocyanate or a prepolymer thereof is added to the hydrophobic oily liquid in an amount of about 0.02 to 1 part per 100 parts of hydrophobic oily liquid.

4,353,810

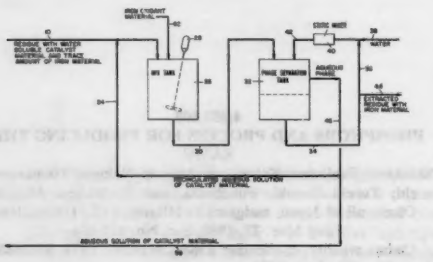
MINIMIZING IRON IN RECOVERED OXIDATION CATALYST MATERIAL IN DMT PROCESS

Jesse G. Wendle, Jr., New Hanover County, N.C., assignor to Hercofina, Wilmington, N.C.

Filed Jan. 21, 1981, Ser. No. 227,002

Int. Cl.³ B01J *31/40*; C07C *69/82*; C01G *51/00, 49/02*

U.S. Cl. 252—412 7 Claims



1. In the cooxidation-coesterification process for the production of dimethyl terephthalate, in which an esterified oxidate residue containing water-soluble, heavy metal, oxidation catalyst material is obtained and catalyst material is recovered in an aqueous solution at a pH in the range of about 3 to 4 by aqueous extraction of said residue, and said aqueous solution of recovered catalyst material is recycled, the improvement in which iron oxidant material selected from the group consisting of hydrogen peroxide, hydrogen peroxide generating compounds, and ozone is admixed with said aqueous solution in quantity sufficient to cause a substantial portion of any iron content of said solution to precipitate, and separating precipitated iron from said solution.

2. The process according to claim 1 in which said iron oxidant material is admixed with said aqueous solution after said aqueous solution has been separated from said residue, and any precipitated iron that results is separated from the resulting iron depleted aqueous solution.

3. A process according to claim 1 in which said iron oxidant material is admixed with said aqueous solution as it is being formed in the aqueous extraction of said residue, and any precipitated iron that results is separated from said solution with the extracted residue when said solution and extracted residue are separated.

4,353,811

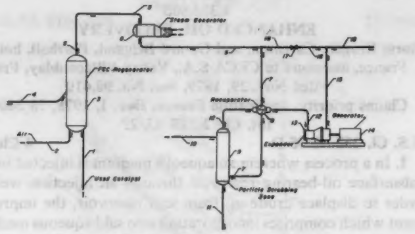
POWER RECOVERY PROCESS USING RECUPERATIVE HEAT EXCHANGE

Allen H. Fink, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 8, 1980, Ser. No. 213,780

Int. Cl.³ B01J *21/20*; F02C *3/00, 7/00*; C10J *3/84*

U.S. Cl. 252—417 10 Claims



1. A process for recovering energy from a high temperature flue gas stream of a catalyst regeneration zone of a fluidized catalytic cracking unit which comprises the steps of:

(a) passing said high temperature flue gas stream having a superatmospheric pressure of between about 25 to 60 psig through a first indirect heat exchange means and cooling the gas stream to a temperature below about 400° C.;

(b) passing the gas stream through a second indirect heat exchange means and cooling the gas stream to a temperature below 150° C.;

(c) removing particles from the gas stream in a particle removal zone in which the gas stream is contacted with a liquid under conditions suitable for the transfer of particles from the gas stream to the liquid;

(d) passing the gas stream through the second indirect heat exchange means and heating the gas stream to a temperature above 300° C. and within 50° to 70° of the temperature of the gas stream entering said second indirect heat exchange means in step (b); and

(e) depressurizing the gas stream in a power recovery expander and thereby recovering useful mechanical energy from the gas stream.

2. The process of claim 1 further characterized in that the gas stream is heated to a temperature between about 300° C. and about 375° C. in step (d).

3. The process of claim 2 further characterized in that the liquid with which the gas stream is contacted in the particle removal zone is water.

4,353,812

FLUID CATALYST REGENERATION PROCESS

David A. Lomas, Arlington Heights, and Gregory J. Thompson, Waukegan, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 15, 1980, Ser. No. 273,296

Int. Cl.³ B01J *21/20*; C10G *11/18*; F27B *15/08*; B01J *29/38*

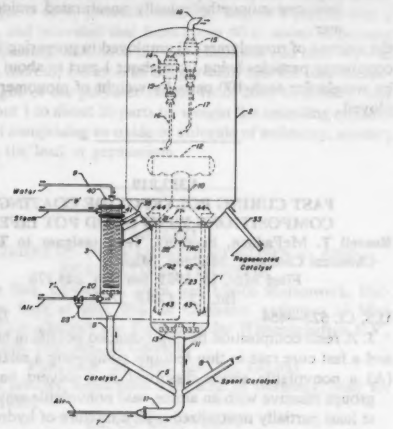
U.S. Cl. 252—417 7 Claims

1. A process for regenerating a coke contaminated fluid catalyst, said process including the steps of:

(a) introducing oxygen containing regeneration gas, coke contaminated fluid catalyst, and cool recycled regenerated catalyst from a source hereinafter described, into a lower locus of a dilute phase combustion zone maintained at a temperature sufficient for coke oxidation and therein oxidizing coke to product hot regenerated catalyst and hot flue gas;

(b) transporting said hot flue gas and said hot regenerated catalyst from an upper locus of said combustion zone into a regenerated catalyst disengaging zone, wherein said hot regenerated catalyst is separated from said flue gas;

(c) transporting a portion of said hot regenerated catalyst from said disengaging zone to the upper locus of a cooling zone separate from said disengaging zone wherein said cooling zone said hot regenerated catalyst is passed downwardly and heat is withdrawn from said hot regenerated catalyst by indirect heat exchange with a cooling fluid enclosed in a heat exchange means inserted into said cooling zone to produce cool regenerated catalyst, said catalyst being maintained in said cooling zone as a dense phase fluidized bed by passing a fluidizing gas upwardly through such bed, the quantity of heat withdrawal from said catalyst in said cooling zone being controllably maintained by controlling the quantity of said fluidizing gas into said cooling zone, whereby the heat transfer coefficient between said heat exchange means and said fluidized bed and thus the quantity of heat transferred is controlled; and



(d) withdrawing said cool regenerated catalyst from a lower locus of said cooling zone and transporting said catalyst to said lower locus of said combustion zone as said cool recycled regenerated catalyst.

2. The process of claim 1 wherein the temperature at a selected locus of said combustion zone is controllably maintained by controlling the quantity of said fluidizing gas to said cooling zone, and thereby the quantity of heat withdrawal from said catalyst in said cooling zone, in response to said temperature at said selected locus.

3. The process of claim 2 wherein said selected locus is an upper locus of said combustion chamber.

4,353,813

CATALYST FOR POLYMERIZATION OF ALPHA-OLEFINS

Nicholas M. Karayannis, Naperville, and John S. Skryantz, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,853

The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **8 Claims**

1. An alpha-olefin polymerization catalyst component obtained by contacting, in the substantial absence of oxygen, water, carbon oxides and other extraneous catalyst poisons, components comprising (A) at least one liquid, halogenated aliphatic having a sufficiently high halogen content to exhibit only insubstantial reactivity with (B); and (B) a solid reaction product of components comprising:

(1) at least one titanium(IV) halide;

(2) at least one organic electron donor which contains oxygen, nitrogen, sulfur and/or phosphorus; and

(3) at least one hydrocarbon-insoluble, magnesium-containing pretreatment product of components comprising

(a) at least one magnesium alcoholate; and

(b) at least one Group II or IIIA metal alkyl;

wherein the atomic ratio of metal in (3)(b) to metal in (3)(a) ranges from about 0.001:1 to about 1:1, the atomic ratio of titanium in (1) to metal in (3)(a) is at least about 0.5:1, and (2) is employed in an amount ranging from about 0.001 to about 1 mole per gram-atom of titanium contained in (1).

4,353,814

REFORMING WITH AN IMPROVED PLATINUM-CONTAINING CATALYST

Regis J. Pellet, Wheaton, Ill.; Ralph J. Bertolacini, Chesterton, Ind., and Donna L. Lysholm, Lisle, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 28, 1979, Ser. No. 108,177

Int. Cl.³ B01J *27/06, 27/10*

U.S. Cl. 252—441 **18 Claims**

1. An improved catalyst for the reforming of a hydrocarbon stream, which catalyst comprises a physical particle-form mixture of a Component A and a Component B, said Component A comprising one or more Group VIII noble metals and a combined halogen deposed on a refractory inorganic oxide and said Component B comprising a metal from Group IVB or Group VB of the Periodic Table of Elements and a combined halogen deposed on a refractory inorganic oxide.

4,353,815

HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 46,885, Jun. 8, 1979, Pat. No. 4,238,366, which is a division of Ser. No. 943,492, Sep. 18, 1978, Pat. No. 4,183,805, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Nov. 3, 1980, Ser. No. 203,017

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.³ B01J *23/58*

U.S. Cl. 252—466 PT **13 Claims**

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material, containing a uniform dispersion of catalytically effective amounts of an alkali or alkaline earth component, a manganese component and a platinum group component which is maintained in the elemental metallic state.

4,353,816

POWER CONDUCTIVE COATING MIXED WITH COPPER POWDER

Yamahiro Iwasa, Hachioji, Japan, assignor to Asahi Chemical Research Laboratory Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,098

Claims priority, application Japan, Jan. 22, 1980, 55-6609

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—512 **1 Claim**

1. A power conductive coating consisting of a mixture in a liquid condition of 70–85 weight percent of copper powder, 15–30 weight percent of at least one selected from the group of phenol resin, epoxy resin, polyester resin and xylene resin, and 0.2–5 weight percent of at least one annex agent selected from the group of anthracene, anthracene carbonylic acid, anthranylic acid and anthrazine.

4,353,817

POLYETHYLENE BASE RESIN COMPOSITION HAVING HIGHLY FILLED WITH AN INORGANIC MATERIAL

Hiroyuki Nakae, Kawasaki; Isamu Noguchi, Tokyo, and Morikuni Hasebe, Kamakura, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP79/00230, § 371 Date Apr. 18, 1980, § 102(e) Date Apr. 18, 1980, PCT Pub. No. WO80/00448, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 29, 1979, Ser. No. 201,066
Claims priority, application Japan, Aug. 29, 1978, 53-105318
Int. Cl.[3] C08K *3/20, 9/04, 3/22, 5/09*
U.S. Cl. 524—232 6 Claims

1. A polyethylene resin composition containing a high concentration of inorganic materials, characterized in that it mainly consists of a resin component formed of (i) 10 to 75 parts by weight of polyethylene which has a density ranging from 0.910 to 0.945 g/cm^3, and a melt index ranging from 0.01 to 2.0 g/10 min., the value of its absorptivity coefficient K'770 of the absorption peak in the proximity of 770 cm^{-1} in the infrared absorption spectrum, being 0.5 to 6, and (ii) 90 to 25 parts by weight of an ethylene-vinyl acetate copolymer, said composition also contains 80 to 250 parts by weight of powdered aluminum hydroxide on the basis of 100 parts by weight of said resin component of said polyethylene resin composition and a monoalkoxy organic titanate compound.

4,353,818

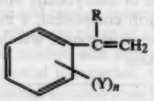
ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 19, 1980, Ser. No. 160,888
Int. Cl.[3] C08L *23/28*
U.S. Cl. 524—458 8 Claims

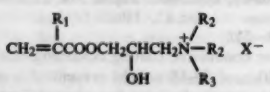
1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 percent of a cationic monomer having the formula

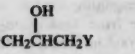


wherein

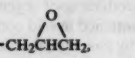
R_1 is hydrogen or methyl,

R_2 is hydrogen or a C_1–C_4 alkyl,

R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxy or halogen,



and $—CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,353,819

FAST CURING POLYEPOXIDE COATING COMPOSITIONS WITH GOOD POT LIFE

Russell T. McFadden, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 13, 1981, Ser. No. 243,278
Int. Cl.[3] C08K *5/07*
U.S. Cl. 523—454 18 Claims

1. A resin composition having extended pot life in bulk form and a fast cure rate in thin sections comprising a mixture of

(A) a nonvolatile amine dissolved in a solvent having no groups reactive with an amine, said nonvolatile amine being at least partially neutralized with a mixture of hydrobromic acid or hydriodic acid and hydrochloric acid,

(B) a volatile ketone, and

(C) a polyglycidyl ether or ester.

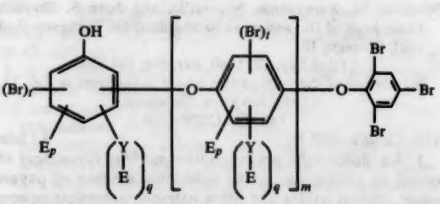
4,353,820

FLAME-RETARDED HIGH IMPACT POLYSTYRENE COMPOSITION

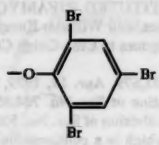
Michael W. Lindvay, 7005 Salge Ct., Ft. Wayne, Ind. 46815

Continuation-in-part of Ser. No. 911,642, Jun. 1, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,745
Int. Cl.[3] C08L *25/04, 71/04;* C08K *3/22*
U.S. Cl. 524—409 5 Claims

1. A flame retarded polystyrene composition comprising from about 50 to about 90 parts by weight polystyrene, from about 9 to about 22 parts by weight of a branched polymer having a hydroxyl number of from 2.8 to about 30 of the structural formula



wherein each repeating unit set out within the brackets of the structural formula is attached in an ortho or para configuration to its adjacent phenyl and phenoxy moiety; and wherein E is an end group of the formula



Y is a side chain of the same structure and configuration as said repeating unit; the substituents Br, E and Y on each phenyl ring are attached only to the ortho or para positions relative the hydroxyl group in the structural formula and the oxygen atom in the repeating unit; each t, p and q are independently the integer 0 or 1, provided that the sum of t plus q plus q equals 2, and provided that from about 10 to about 80 percent of the repeating units have the side chain and end unit —Y—E attached thereto; and m is an integer such that the total molecular weight of the polymer ranges from 2000 to 20,000, and from about 1 to about 10 parts by weight fire retarding enhancing agent comprising an oxide or chloride of antimony, arsenic, bismuth, tin, lead or germanium.

4,353,821

METHOD OF PREPARING THYMOSIN α_1 AND DERIVATIVES THEREOF

Christian Birr, Leimen-St. Ilgen, and Ulrich Stollenwerk, Heidelberg, both of Fed. Rep. of Germany, assignors to Max Planck-Gesellschaft zur Forderung der Wissenschaften E.V., Gottingen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,031

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919592

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **8 Claims**

1. Polypeptides of the sequence Ser-Asp-Ala-Ala-Val-Asp-Thr-Ser-Ser-Glu-Ile-Thr-Thr-Lys-Asp-Leu-Lys-Glu-Lys-Lys-Glu-Val-Val-Glu-Glu-Ala-Glu-Asn, characterized in that at least one of the amino acids 10, 15, 21, 25 and/or 28 is present as amide or alkyl amide, and/or amino acid 1 bears an acyl group other than acetyl, having up to 6 carbon atoms, especially an acyl glycine residue.

4,353,822

ANTIGENIC LINEAR PEPTIDE COMPOUNDS

Erwin Goldberg, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed May 26, 1981, Ser. No. 267,021

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **5 Claims**

1. The linear peptide compounds having chain lengths of from 8 to 10 amino acids arranged in a sequence from N-terminal to C-terminal amino acids which include the antigenic sequence Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg, said compounds being selected from the class of compounds consisting of:

(a) Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg,

(b) Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg-Val,

(c) Gly-Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg, and

(d) Gly-Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg-Val,

wherein Gly represents glycine, and Ile, Ser, Phe, Pro, Val, and Arg, respectively represent the L-amino acid forms of isoleucine, serine, phenylanine, proline, valine, and arginine.

4,353,823

SYNTHETIC ANALOG OF TUFTISIN

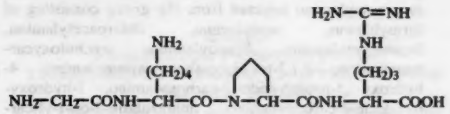
Gunar I. Chipens, ulitsa Apes, 12, kv. 81; Nadezhda I. Veretennikova, ulitsa Veyavas, 10/1, kv. 11, and Zeltite A. Atare, ulitsa Volguntes, 82, kv. 1, all of Riga, U.S.S.R.

Filed Sep. 1, 1981, Ser. No. 298,396

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. A synthetic analog of tuftisin, viz. glycyl-lysyl-prolyl-arginine of the formula:



4,353,824

CHROMOPHORIC CEPHALOSPORINS

Peter Schindler, Rodgau, and Gerhard Huber, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

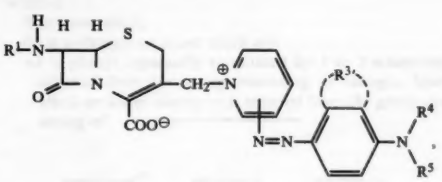
Filed Apr. 22, 1980, Ser. No. 142,767

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916433

Int. Cl.³ C07D *501/38*

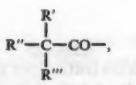
U.S. Cl. 260—156 **3 Claims**

1. A cephalosporin of the formula



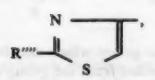
wherein

R^1 is hydrogen, formyl, or



wherein in turn

R′ is hydrogen; alkyl having 1 to 4 carbon atoms; such alkyl substituted by chlorine, by bromine, by cyano, by hydroxy, or by alkoxy having 1 to 4 carbon atoms; or is ω-carboxyalkyl; ω-carboxy-ω-aminoalkyl; ω-carboxy-ω-benzoylaminoalkyl; cycloalkyl or cyclalkenyl having 5 to 7 carbon atoms; phenyl; phenyloxy; or phenyl or phenyloxy mono- or di-substituted by alkyl having 1 to 4 carbon atoms, by hydroxy, by alkoxy having 1 to 4 carbon atoms, by alkanoyloxy having 1 to 4 carbon atoms, by fluorine, by chlorine, by carboxy, by sulfoxy, by amino, or by alkanoylamino having 1 to 4 carbon atoms; or R′ is 2-pyridon-1-yl; 4-pyridon-1-yl; 3,5-dichloro-pyridon-1-yl; 2-thienyl; 3-thienyl; 2-furyl; 3-furyl; tetrazolyl; or is thiazolyl of the formula



wherein R″″ is alkyl having 1 to 4 carbon atoms, for-

mamido, acetamido, chloroacetamido, bromoacetamido, or trifluoroacetamido; or R′ is 2-methyl-1,3,4-thiadiazol-5-yl-thio; or is 2-amino-1,3,4-thiadiazol-5-yl-thio;

R″ and R‴, taken together, are oxygen, or, taken alone, are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; hydroxy; alkanoyloxy having 1 to 4 carbon atoms; alkoxy having 1 to 4 carbon atoms; amino; alkylamino; alkylamino mono- or di-substituted by p-methoxyphenyl or mono-, di-, or tri-substituted by phenyl; alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl group; chlorine; bromine; cyano; sulfoxy; aminosulfonyl; or are acylamino selected from the group consisting of formylamino, acetylamino, chloroacetylamino, bromoacetylamino, benzoylamino, tert.butoxycarbonylamino, 2,2,2-trichloroethoxy-carbonylamino, 4-hydroxy-1,5-naphthyridin-2-carbonylamino, 3-hydroxy-pyridazin-4-carbonylamino, imidazolidin-2-on-1-yl-carbonylamino, (3-methyl-sulfonyl-imidazolidin-2-on-1-yl) carbonylamino, and (4-ethyl-piperazin-2,3-dion-1-yl) carbonylamino;

R^4 and R^5 are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; or alkyl having 1 to 4 carbon atoms substituted by cyano, by carboxy, by alkoxy having 1 to 4 carbon atoms, by hydroxy, by alkanoyloxy having 1 to 4 carbon atoms, by aminocarbonyl, by sulfoxy, or by chloro; and

$R^{3'}$ is two hydrogen atoms or is benzo, pyrido, thieno, pyrimidino, or thiazolo.

4,353,825

5,6-DEHYDROPENICILLINS

Luciano Re; Alberto Brant, both of Rome, and Luciano Bassignani, Passo Corese, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

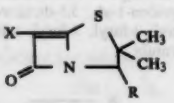
Division of Ser. No. 58,945, Jul. 19, 1979, Pat. No. 4,288,366, which is a division of Ser. No. 949,546, Oct. 10, 1978, abandoned, which is a division of Ser. No. 769,527, Feb. 17, 1977, Pat. No. 4,133,807. This application Feb. 19, 1981, Ser. No. 236,029

Claims priority, application Italy, Feb. 23, 1976, 20457 A/76

Int. Cl.³ C07D *499/44;* A61K *31/43*

U.S. Cl. 260—239.1 **5 Claims**

1. Compounds of the formula:



wherein X is an aminic group which may be substituted with at least one member selected from the group consisting of aralkyl and acyl and R is a carboxyl group or a salt, an amide, an ester, or thioester thereof.

4,353,826

SUBSTITUTED RIFAMYCINS

Hans Bickel, Binningen, and Wilhelm Kump, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 31,679, Apr. 19, 1979, Pat. No. 4,261,891, which is a continuation of Ser. No. 734,855, Oct. 22, 1976, abandoned, which is a division of Ser. No. 508,974, Sep. 25, 1974, Pat. No. 4,005,077, which is a continuation-in-part of Ser. No. 342,222, Mar. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 5,899, Jan. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 571,413, Aug. 10, 1966, abandoned. This application Sep. 30, 1980, Ser. No. 192,578

Claims priority, application Switzerland, Aug. 24, 1965, 11879/65; Aug. 11, 1969, 12131/69; Dec. 8, 1969, 18249/69

Int. Cl.³ C07D *521/00*

U.S. Cl. 260—239.3 P **13 Claims**

1. A member selected from the group consisting of a 3-amino rifamycin S, in that it contains in position 3 an amino group of the formula

wherein the groups R_1 and R_2 are each a group selected from the group consisting of hydrogen, an alkyl or alkenyl group with at most 8 C-atoms, a cycloalkyl or cycloalkenyl group having from 3–8 ring C-atoms, a cycloalkyl-alkyl, cycloalkenyl-alkyl, cycloalkyl-alkenyl or cycloalkenyl-alkenyl group having at most 8 C-atoms in the aliphatic moiety and 3–8 ring C-atoms, a phenyl-alkyl- or phenyl-alkenyl group having at most 8 C-atoms in the aliphatic moiety, the cyclic derivatives being unsubstituted or substituted by one to three alkyl groups having not more than 3 C-atoms, and any of all these radicals substituted by one to three functional groups selected from among the group consisting of free or etherified hydroxyl groups derived from aliphatic alcohols having not more than 3 carbon atoms, halogen atoms, free or esterified carboxyl groups with at most 4 C-atoms, aldehyde groups or aldehyde acetal groups derived from alkanols with not more than 3 C-atoms, nitrile groups or open chained primary, secondary or tertiary aliphatic amino groups derived from alkyls having from 1 to 4 C-atoms, a pyrrolidino, piperidino or piperazinyl-1 group or an N′-(1–6 C)-alkyl-piperazinyl-1 group or morpholino group, the corresponding rifamycin SV derivatives, their 16, 17; 18, 19; tetrahydro and 16, 17; 18, 19; 28, 29-hexahydroderivatives, and therapeutically acceptable metal salts of compounds of acidic character, therapeutically acceptable acid addition salts of compounds having a basic group and quaternary ammonium salts of all these compounds with hydrohalic, sulphuric or sulphonic acid esters of alkanols having from 1 to 16 C-atoms.

4,353,827

DIAZEPINE DERIVATIVES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

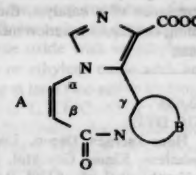
Filed Feb. 18, 1982, Ser. No. 349,801

Claims priority, application Switzerland, Feb. 27, 1981, 1338/81; Feb. 27, 1981, 1339/81; Feb. 27, 1981, 1341/81; Feb. 27, 1981, 1342/81; Jun. 4, 1981, 3675/81; Dec. 11, 1981, 7934/81

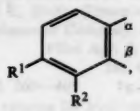
Int. Cl.³ C07D *513/22, 471/14, 471/22*

U.S. Cl. 260—239.3 P **21 Claims**

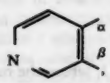
1. A compound of the formula



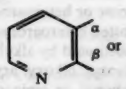
wherein A together with the two carbon atoms denoted as α and β is the group



(a)



(b)



(c)

(d)

B is dimethylene, trimethylene or propenylene, R^1 is hydrogen, halogen, trifluoromethyl, amino, nitro, cyano or lower alkyl and R^2 is hydrogen, halogen, trifluoromethyl, amino, nitro, cyano, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulphinyl or lower alkylsulphonyl, and the carbon atom denoted as γ has the (S)— or (R,S)—configuration,

and pharmaceutically acceptable acid addition salts thereof.

4,353,828

PREPARATION OF FLUORINATED METHYL AMINOALKANOIC ACIDS AND NOVEL PROCESS INTERMEDIATES

Philippe Bey, Strasbourg, France; Fritz Gerhart, Willstaett, Fed. Rep. of Germany, and Viviane Van Dorsselaer, Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

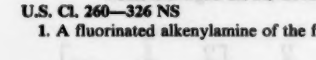
Filed Jul. 21, 1980, Ser. No. 170,395

Claims priority, application United Kingdom, Jul. 26, 1979, 7926030; Jan. 25, 1980, 8002554

Int. Cl.³ C07C *87/26*; C07D *209/48*

U.S. Cl. 260—326 NS **5 Claims**

1. A fluorinated alkenylamine of the formula



wherein

R_1 represents hydrogen or a straight or branched chain alkyl group of from 1 to 10 carbon atoms;

n represents zero, 1, 2, or 3; and

Y represents

(a), when n represents 0, CH_2F,

(b), when n represents 1, CH_2F or CHF_2, and

(c), when n represents 2 or 3, CH_2F, CHF_2, or CF_3,

or an acid addition salt thereof, or a derivative of said alkenylamine in which the amino group is protected against oxidation by a subsequently removable blocking group selected from lower alkanoyl, monocyclic aroyl, lower alkoxycarbonyl, carbobenzoxy, benzenesulfonyl, tosyl, and phthalyl.

4,353,829

PROCESS FOR 5-AROYLATION OF 1,2-DIHYDRO-3H-PYRROLO[1,2-A]PYRROLE-1-CARBOXYLIC ESTERS

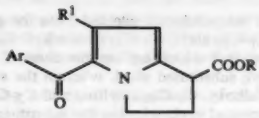
T. C. Thurber, Los Altos, and Derek Tegg, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 21, 1980, Ser. No. 208,920

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—326.25 **25 Claims**

1. A process for preparing a compound of the formula



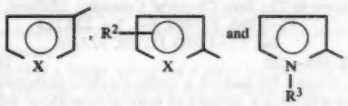
(II)

wherein

R is lower alkyl;

R^1 is hydrogen or lower alkyl; and

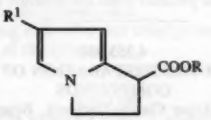
Ar is phenyl, optionally substituted by 1 to 3 substituents selected from the group consisting of halogen, lower alkyl, or lower alkoxy or is selected from the group consisting of



wherein X is O or S, R^2 is hydrogen, methyl, chloro or bromo; and R^3 is hydrogen or lower alkyl;

which process comprises:

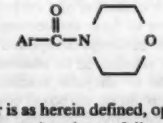
(a) treating a compound of the formula



(I)

wherein

R and R^1 are as herein defined, with a mixture of an inorganic acid chloride and a compound of the formula:



(A)

wherein Ar is as herein defined, optionally in the presence of an inert aprotic solvent, followed by

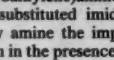
(b) mixing therewith a weak base.

4,353,830
PROCESS FOR THE PREPARATION OF SUBSTITUTED AMIDINES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 26, 1979, Ser. No. 106,678
Int. Cl.³ C07D 207/04; C07C 81/00
U.S. Cl. 260—326.86 10 Claims

1. In process for making substituted amidines which comprises reacting (a) (chloroalkylene)ammonium chlorides with a primary amine or (b) substituted imidoyl chlorides with a secondary or a primary amine the improvement comprising carrying out the reaction in the presence of at least one mole of a coreacted base selected from the group consisting of:
(A) tertiary amines;
(B) alkali or alkaline earth metal hydroxide;
(C) the amidine itself that is the product of the reaction;
(D) an excess of the primary or secondary amine reactant;
(E) quaternary ammonium hydroxides, said substituted imidoyl chlorides being represented by the formula



wherein R″ is independently selected from the group consisting of C_1–C_{20} alkyl, C_3–C_{12} cycloalkyl; C_6–C_{14} aryl; alkaryl or aralkyl which are combinations of said alkyl and said aryl; substituted alkyl, wherein the substituents are C_1–C_{10} alkoxy, C_1–C_{10} alkylthio and C_2–C_{12} dialkylamino; substituted aryl, wherein the substituents are the same as defined for said substituted alkyl, plus chlorine, bromine and fluorine; and, R is the same as R″ or hydrogen; said reaction being conducted in the absence of moisture in an inert medium at temperatures in the range of about 0°–100° C.

4,353,831
PROCESS FOR MAKING ALKYLENE CARBONATES

Paul E. Strege, and James M. Renga, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1981, Ser. No. 230,213
Int. Cl.³ C07D 317/38, 317/36
U.S. Cl. 549—229 10 Claims

1. A process for making a cyclic alkylene carbonate which comprises heating a mixture of hexachloroacetone with about a molar equivalent of a vicinal alkylene diol in the presence of a small but effective amount of a base selected from the group consisting of an alkali metal alkoxide, a non-nucleophilic organic base, and a salt of a strong base and a weak acid at about 100° C.–250° C., thereby causing the formation and substantial distillation of chloroform from said mixture and separating the alkylene carbonate product from the residual mixture.

4,353,832
PROCESS FOR THE PREPARATION OF CARBOXYL COMPOUNDS

Andre Lecloux, Meise; Claude Declerck, Brussels, and Franz Legrand, Quaregnon, all of Belgium, assignors to INTEROX (Societe Anonyme), Brussels, Belgium

Filed Jun. 5, 1980, Ser. No. 157,274
Claims priority, application France, Jun. 29, 1979, 79 17307
Int. Cl.³ C07D 313/04; C07C 51/16, 51/235, 67/39
U.S. Cl. 549—272 13 Claims

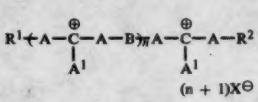
1. In a process for the oxidation of a carbonyl compound in a liquid reaction mixture to form the corresponding carboxyl compound, wherein the carbonyl compound is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, aliphatic or alicyclic ketones and aldehydes, and wherein the corresponding carboxyl compound is a carboxylic acid when the carbonyl compound is an aldehyde, an ester when the carbonyl compound is a ketone, and a lactone when the carbonyl compound is a cyclic ketone, by reacting the carbonyl compound with hydrogen peroxide in the liquid reaction mixture, and in the presence of a catalyst, the improvement comprising maintaining the liquid reaction mixture in a substantially anhydrous state.

4,353,833
CATIONIC DYES

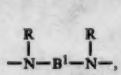
Horst Bruder, Ludwigshafen; Hans-Juergen Degen, Lorsch; Franz Feichtmayr, Ludwigshafen; Klaus Grychtol, Bad Duerkheim, and Udo Mayer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 206,254
Int. Cl.³ C07C 15/16; C09B 11/10
U.S. Cl. 260—386 1 Claim

1. A cationic dye of the formula



wherein
n is an integer equal to or greater than 1; where the radicals A, A^1 and B are identical or different and
A is unsubstituted or substituted benzene or heteroaromatic,
A^1, if n=1, is unsubstituted or substituted heteroaromatic or is aryl which is unsubstituted or substituted by alkyl, aryl, cycloalkyl, chlorine, bromine, hydroxyl, alkoxy, aryloxy, nitro, hydroxycarbonyl, alkoxycarbonyl or aminocarbonyl, and if n>1, A^1 may also be aryl substituted by unsubstituted or substituted amino,
B is a bridge member of the formula



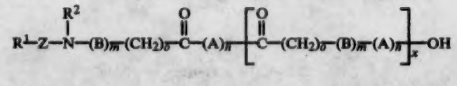
where the R's are the same or different and are selected from the group consisting of hydrogen; C_1–C_4-alkyl which is unsubstituted or substituted by chlorine, bromine hydroxyl, C_1–C_4-alkoxy, phenyl or tolyl; cycloalkyl; phenyl and tolyl,
B^1 is a bridge member which may or may not be quaternized,
R^1 and R^2 are hydrogen, unsubstituted or substituted alkyl, cycloalkyl, aryl, alkoxy or amino, and
$X^\ominus$ is an anion.

4,353,834
CARBONATE AND CARBOXYLIC ACID ESTER GROUP-CONTAINING NON-IONIC SURFACE-ACTIVE AGENTS

William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 13, 1981, Ser. No. 229,048
Int. Cl.³ C07C 68/00, 69/96
U.S. Cl. 260—404.5 10 Claims

1. A composition of matter having the formula



wherein R^1 is the residue of a hydrophobic aliphatic or aliphatic-aromatic compound selected from the group consisting of at least one of an alkyl, alkylaryl, arylalkyl, and alkylarylalkyl group; wherein each alkyl group, contains about 6 to about 30 carbon atoms; R^2 is hydrogen, alkyl, or substituted alkyl of 1 to about 4 carbon atoms; wherein A is the residue of a hydrophilic oxyalkylene polymer derived from the same or different

alkylene oxides; wherein said polymer is selected from at least one of the group consisting of heteric, block, or homopolymer polyalkylene glycols derived respectively from the reaction of ethylene oxide with an alkylene oxide having 3 to 4 carbon atoms or ethylene oxide with an active hydrogen compound having at least two active hydrogen atoms; wherein B is C═O, m is 0 or 1, Z is C═O or O═S═O, x is an integer of 1 to 20, n is individually selected from integers such that the molecular weight of A is about 104 to about 1000; o is an integer of 0 to 4, and when o is 0, m is 0.

4,353,835

PROCESS FOR HYDROGENATING UNSATURATED CARBOXYLIC ACIDS AND CARBOXYLIC ACID ESTERS

Harold E. Swift, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 2, 1981, Ser. No. 250,236
Int. Cl.³ C11C 3/12
U.S. Cl. 260—409 13 Claims

1. A process for hydrogenating unsaturated carboxylic acids and esters of unsaturated carboxylic acids which comprises reacting an unsaturated carboxylic acid, an ester of a carboxylic acid or a mixture thereof with hydrogen in contact with a nickel silica catalyst obtainable from a layered complex nickel silicate characterized as having repeating units of the structural formula:

$$[(1-x)Ni^{+2}+xMg^{+2}]_3(OH)_4Si_2O_5.wH_2O,$$

wherein x is a number from 0 to 0.6 and w is a number ranging from 0 to 4, by a multi-stage procedure comprising a first reduction in a hydrogen atmosphere at a temperature of about 200° C. to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of at least about one hour, an oxidation in an atmosphere containing molecular oxygen at a temperature of about 100° C. to about 600° C. for a period of at least about two hours using a gas containing from about two to about 90 volume percent molecular oxygen, and then again a reduction in a hydrogen atmosphere at a temperature of about 200° C. to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of at least about one hour.

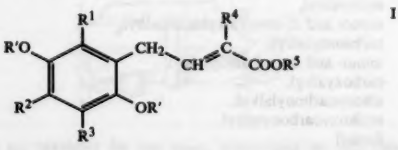
4,353,836

4-(2,5-DIHYDROXYPHEN-1-YL)-CROTONIC ACID AND ITS DERIVATIVES, AND THE PREPARATION OF THESE COMPOUNDS

Michael Horner, Neustadt, and Axel Nissen, Leimen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,609
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010474
Int. Cl.³ C07C 69/28, 69/734, 59/64
U.S. Cl. 260—410.5 3 Claims

1. 4-(2,5-Dihydroxyphen-1-yl)-crotonic acid and its derivatives of the general formula I



I

where R^1, R^2, R^3 and R^4 are each H or C_1–C_8-alkyl, R^5 is H, C_1–C_{30}-alkyl or C_2–C_{30}-alkenyl, and R' is H or an organic radical which can be split off hydrolytically or hydrogenolytically.

4,353,837

METHOD FOR CONTINUOUS AZEOTROPIC PROCESSING OF VEGETABLE AND PROTEIN MATERIAL

Roy W. Barns, P.O. Box 215-B, R.R. 1, Broadway, Va. 22815

Continuation-in-part of Ser. No. 14,090, Feb. 22, 1979, Pat. No. 4,260,457, which is a continuation-in-part of Ser. No. 807,021, May 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 550,157, Feb. 14, 1975, abandoned. This application Apr. 6, 1981, Ser. No. 251,547
Int. Cl.³ B01D 3/36; C11B 1/10
U.S. Cl. 260—412.4 11 Claims

1. An azeotropic oil extraction process, comprising the steps of:

(a) continually feeding particles of oil-bearing protein material containing both bound and unbound water to the top of a vertical column which has a plurality of vertically spaced perforate plates containing small openings through which the protein material progressively settles downwardly creating a plurality of spaced beds of downwardly settling oil-bearing protein material,

(b) passing a quantity of oil solvent vapor maintained at a temperature above the azeotropic boiling point upwardly through the column in sufficient volume to provide upward flow through the perforate plates counter-current to the downwardly settling oil-bearing protein material to carry fluids upwardly through the column without carrying the particles upwardly from one bed to another therewith,

(c) assisting settling of the particles of oil-bearing protein material by periodically blocking upward vapor flow through the perforate plates at the bottom of the beds and immediately adjacent the surface of the plates with a blade,

(d) maintaining the solvent vapor at a temperature above the azeotropic boiling point for the solvent and water during its entire passage upwardly through the column,

(e) creating a turbulent miscella pool of oil, and liquid solvent above a relatively thin layer of particles disposed immediately above the top plate,

(f) maintaining a vapor atmosphere above the liquid miscella pool of solvent and water immediately adjacent the top of the column into which the oil-bearing protein material is introduced,

(g) supplying a liquid solvent at a point between the lowermost perforate plate and the top perforate plate,

(h) withdrawing the miscella from the liquid miscella pool to separate the oil therefrom,

(i) removing solvent and water vapor from the top of the column,

(j) supplying additional solvent vapor to the column at an intermediate point in the column below and near the top plate at a volume which is dependent upon the azeotropic conditions in the column, and

(k) withdrawing a de-oiled and dried protein material from the bottom of the column.

4,353,838

PROCESS FOR SEPARATING A MONOETHANOID FATTY ACID

Michael T. Cleary, Elmhurst, and Santi Kulprathipanja, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 13, 1981, Ser. No. 234,518
Int. Cl.³ C09F 5/10; C11B 3/00
U.S. Cl. 260—419 12 Claims

1. A process for separating a monoethanoid fatty acid from a mixture of fatty acids comprising a monoethanoid fatty acid and a diethanoid fatty acid, wherein said monoethanoid fatty acid possesses a lesser degree of unsaturation than said diethanoid fatty acid, which comprises contacting said mixture at adsorption conditions with a nonionic hydrophobic insoluble crosslinked polystyrene polymer adsorbent to selectively ad-

sorb said monoethanoid fatty acid having a lesser degree of unsaturation and to permit said diethanoid fatty acid having a greater degree of unsaturation to elute through said adsorbent.

4,353,839

PROCESS FOR SEPARATING SATURATED FATTY ACIDS

Michael T. Cleary, Elmhurst, and Santi Kulprathipanja, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 25, 1981, Ser. No. 238,231
Int. Cl.³ C11C *1/08*
U.S. Cl. 260—419 **10 Claims**

1. A process for separating stearic acid from a mixture comprising said stearic acid and palmitic acid which comprises contacting said mixture at adsorption conditions with a nonionic hydrophobic insoluble crosslinked polystyrene polymer adsorbent in an adsorption column containing said adsorbent to selectively adsorb said stearic acid and to selectively permit the nonadsorbed portion of said mixture comprising palmitic acid to elute through said adsorption column.

4,353,840

USE OF AMINE-ALUMINUM CHLORIDE ADDUCTS AS ALKYLATION INHIBITORS IN A LIGAND-COMPLEXING PROCESS

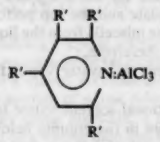
Donald J. Haase, Houston; David G. Walker, Baytown, and Paul C. Ostrowski, Webster, all of Tex., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Division of Ser. No. 171,630, Jul. 23, 1980, abandoned. This application Mar. 6, 1981, Ser. No. 241,200
Int. Cl.³ C07F *5/06*
U.S. Cl. 260—448 R **7 Claims**

1. An alkylation inhibitor for ligand-separation processes in which a gas feedstream containing a complexible ligand is contacted with a liquid sorbent comprising cuprous aluminum tetrachloride and an aromatic hydrocarbon that is a solution of an amine-aluminum chloride adduct selected from the group consisting of

(a) adducts having the formula $R_3N{:}AlCl_3$, wherein each R represents hydrogen, alkyl having 1 to 3 carbon atoms, phenyl, or methylphenyl;

(b) adducts having the formula



wherein each R′ represents hydrogen or alkyl having 1 to 4 carbon atoms, and

(c) mixtures thereof in a solvent selected from the group consisting of aromatic hydrocarbons and liquid sorbents that comprise cuprous aluminum tetrachloride and an aromatic hydrocarbon.

4,353,841

AROMATIC ISOCYANATE PREPARATION

Jai H. Kyung, Dublin; Robert A. Grimm, Upper Arlington, and Joseph G. Holehouse, Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 19, 1982, Ser. No. 350,445
Int. Cl.³ C07C *118/00*
U.S. Cl. 260—453 P **8 Claims**

1. A method for preparing an aromatic isocyanate which comprises contacting a Group VII of a Group VIII metal catalyst at a temperature between about 350° and 550° C. with a feed stream consisting essentially of an aromatic hydrocarbon, nitric oxide and carbon monoxide wherein the mole ratio of nitric oxide to carbon monoxide is at least one and recovering aromatic isocyanate from the reaction effluent stream.

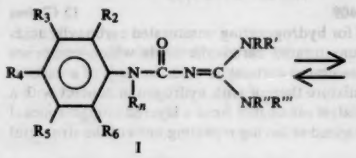
4,353,842

AMIDINOUREAS

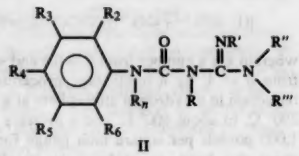
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Malvern, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 942,247, Sep. 14, 1978, Pat. No. 4,204,000, which is a continuation-in-part of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Feb. 5, 1980, Ser. No. 118,826
Int. Cl.³ C07C *127/19, 129/12, 121/52*
U.S. Cl. 260—465 D **3 Claims**

1. An amidinourea compound of the general formula I or its tautomeric form II wherein R is hydrogen:



I



II

where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are
hydrogen,
halologweralkyl,
nitro,
arloweralkoxy,
acyloxy,
cyano,
halologweralkoxy, or
loweralkylsulfonyl;

R and R′ are hydrogen or loweralkyl;

R″ and R‴ are hydrogen,
loweralkyl,
loweralkenyl,
cycloalkenyl up to 9 carbon atoms,
cycloalkylloweralkyl,
cycloalkyl,
aralkyl,
loweralkynyl,
haloalkyl,
hydroxyalkyl,
alkoxyalkyl,
cyanoalkyl,
aminoalkyl,
mono- and di-loweralkylaminoalkyl,
carbamoylalkyl,
mono- and di-carbamoylalkyl,
carboxyalkyl,
alkoxycarbonylalkyl,
aralkoxycarbonylalkyl,
formyl,
acyl,
acylalkyl,
alkylsulfonyl or
aralkylsulfonyl;

R_n is hydrogen or loweralkyl provided at least one of R, R′, R″

and R''' is other than hydrogen; and the non-toxic acid addition salts thereof.

4,353,843

PREPARATION OF NITRITE ESTERS

Arthur R. Doumaux, Jr., Charleston; James M. Downey, St. Albans; Joseph P. Henry, South Charleston, and John M. Hurt, St. Albans, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 227,798, Jan. 23, 1981, abandoned. This application Mar. 12, 1981, Ser. No. 239,761

Int. Cl.³ C07C *77/00*

U.S. Cl. 260—466 20 Claims

1. The process for making methyl or ethyl nitrite from methanol or ethanol, respectively, which comprises reacting in a reaction zone a molar amount of nitrogen oxide composition containing a nitric oxide to nitrogen dioxide molar ratio of greater than 1, in the vapor state, with a molar amount of vaporized methanol or ethanol wherein the molar ratio of methanol or ethanol to the combined molar amount of nitric oxide and nitrogen dioxide is greater than one, in the presence of an inert gaseous diluent for said reaction, at a temperature of between about 10° C. to about 300° C. for a period of time sufficient to form methyl or ethyl nitrite.

4,353,844

PREPARATION OF ANHYDRIDES BY CARBONYLATION OF ESTERS

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 7, 1981, Ser. No. 281,179

Claims priority, application France, Sep. 11, 1980, 80 19875

Int. Cl.³ C07C *51/56, 53/12*

U.S. Cl. 260—549 30 Claims

1. A process for the preparation of a carboxylic acid anhydride, comprising carbonylating a carboxylic acid ester in liquid phase, in an essentially anhydrous reaction medium including a sulfone reaction solvent, and in the presence of a catalytically effective amount of (i) nickel and an alkyl or acyl iodide promoter therefor, and (ii) a co-catalyst which comprises at least one alkali or alkaline earth metal salt, or quaternary ammonium or phosphonium iodide.

4,353,845

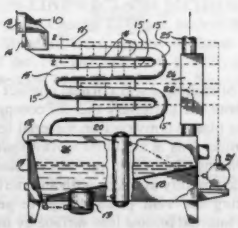
GAS SCRUBBER

Joseph A. Chartrand, St. Hugues, Province of Quebec, Canada (J0H 1N0), and Irenee Perreault, 515 Casavant Blvd., West, Saint-Hyacinthe, Province of Quebec, Canada (G2S 7K1)

Filed May 4, 1981, Ser. No. 259,832

Int. Cl.³ B01D *47/02, 47/06, 47/12*

U.S. Cl. 261—3 1 Claim



1. A gas scrubber for hot gases, comprising an upstream precipitation section and a downstream sedimentation section located below the precipitation section and consisting of an elongated tank, water contained in said tank, the latter defining a gas compartment above said water, said precipitation section consisting of a serpentine duct comprising a plurality of straight duct portions disposed one below the other, said serpentine duct having an upper inlet and a lower outlet for the hot gases flowing therethrough, each straight duct portion downwardly inclined in the direction of gas flow, said lower outlet communicating with the top of said tank at one end thereof, a gas exhaust chimney communicating with the top of said tank at the opposite end thereof, a plurality of groups of water jets extending into each straight duct portion, and longitudinally spaced along the same, the water jets of each group being spacedly arranged in a common transverse plane relative to each straight duct portion and inwardly extending radially and convergingly to form a water curtain in the corresponding transverse plane, the hot gasses passing through the successive water curtains and the water from said water curtains flowing under gravity along said straight and said U-shaped duct portions into said tank so as to form a layer of water in said straight duct portions, pump means for recirculating the water in said tank through said water jets, and a heat exchanger in the water of said tank to recuperate the heat from said water for external use.

4,353,846

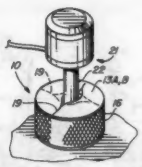
FILTER ASSEMBLY FOR EVAPORATIVE COOLER PUMPS

Douglas W. Mehrens, 918 W. Portland, Phoenix, Ariz. 85004, and James F. Kuchar, 5524 E. Cactus, Scottsdale, Ariz. 85254

Filed Nov. 16, 1981, Ser. No. 321,766

Int. Cl.³ B01D *35/02*

U.S. Cl. 261—4 6 Claims



1. A filter assembly for a pump comprising:

a cylindrical housing open at one end with the cylindrical side of said housing being formed of an open mesh material,

a filter pad mounted within said housing juxtapositioned to the inside periphery of said housing, and

cover means for the open end of said housing,

said cover means defining an opening extending through a resilient portion thereof which is distortable when an impeller blade and its shaft is forced therethrough, but which assumes a substantially closed relaxed position sequentially thereafter.

4,353,847

FUEL SUPPLY SYSTEM FOR SMALL ENGINE

Masato Sato, Akashi, and Masanobu Yamashita, Miki, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 28, 1981, Ser. No. 335,014

Claims priority, application Japan, Dec. 26, 1980, 55-188404

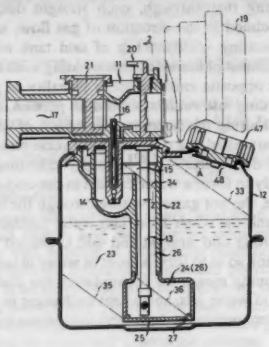
Int. Cl.³ F02M *17/06*

U.S. Cl. 261—36 A 3 Claims

1. A fuel supply system for a small engine comprising a fuel tank mounted on the underside of a carburetor, and a constant level fuel chamber receiving fuel from the fuel tank through a fuel drawing pipe to store same temporarily therein and eject same into the carburetor, such fuel supply system further comprising:

a cover enclosing said fuel drawing pipe and said constant level fuel chamber to separate the fuel drawing pipe and

the constant level fuel chamber from a fuel storing section in the fuel tank; and



a communication port formed at the bottom of said cover for communicating a fuel feeding section in the cover with the fuel storing section.

4,353,848

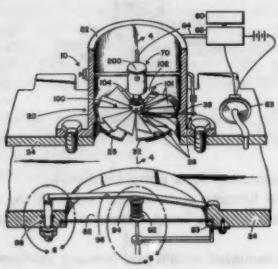
FUEL/AIR METERING APPARATUS

Earl D. Carsten, 15421 Cameo Dr., Sun City, Ariz. 85351

Filed Jul. 25, 1980, Ser. No. 172,258

Int. Cl.³ F02M *17/16*

U.S. Cl. 261—69 R **4 Claims**



1. A fuel/air metering system for an externally timed ignition internal combustion engine, comprising:

air metering means having an air conduit and a throttle plate rotatably mounted within said air conduit provided with at least a generally planar throttle plate surface and an axis of rotation perpendicular to said planar surface for controllably metering at least an airflow into the engine;

fuel metering means having a diaphragm for controllably metering a flow of fuel into said airflow in response to intake manifold vacuum so that a fuel/air mixture flow is provided;

vaporizing means for mechanically inducing turbulence and swirl into said fuel/air mixture flow so that said fuel tends to vaporize;

said fuel metering means further comprising said diaphragm having a first surface in communication with said intake manifold vacuum and a second surface in communication with atmospheric pressure;

said fuel metering means further comprising a pump for pumping a flow of said fuel under pressure from the fuel reservoir;

said fuel metering means further comprising fuel control valve means at least partly in communication with said air conduit having a rotatable valve body for controllably restricting the rate of entry of said fuel flow into said airflow;

said fuel metering means further comprising rotating means in communication with said diaphragm and said valve body for rotating said valve body as a function of at least a displacement of said diaphragm;

said fuel control valve means further comprising said valve body having a metering rod portion provided with a valve head at a first end and a threaded portion;

said fuel control valve means further comprising a valve housing coupled to said air conduit having a fuel inlet aperture, a fuel outlet aperture concentrically disposed about said metering rod portion of said valve body, a valve seat at the terminus of said fuel outlet aperture so that said valve seat and said valve head cooperatively define a valve orifice, and a valve body aperture having at least a portion threadedly engaged to said valve body threaded portion so that rotating said valve body produces a longitudinal translation of said valve body within said valve housing tending to vary the area of said valve orifice;

said rotating means comprising said valve body having an arm member;

said rotating means further comprising first means having a cable provided with a diaphragm end coupled to said portion of said diaphragm for transferring said displacement of said portion of said diaphragm to said arm member so that said valve body can be rotated thereby;

said rotating means further comprising said arm member having a cam follower surface; and

said rotating means yet further comprising said cable means having cam means having a cam surface in communication with said cam follower surface for translating said cam follower surface as a function of said displacement of said diaphragm.

4,353,849

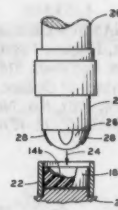
MANUFACTURE OF SOFT CONTACT LENSES HAVING VENT PASSAGEWAYS

Lawrence Lewison, c/o Contact Lens Specialists, 489 Fifth Ave., New York, N.Y. 10017

Filed Jun. 19, 1981, Ser. No. 275,373

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—2.7 **3 Claims**



1. A method of making a soft corneal contact lens with vent passageways about the periphery thereof comprising the steps of providing the plastic construction material for fabricating a soft corneal contact lens in an initial work-in-process cylindrical form, machining the upper portion of said form into a concave shape to embody said lens with an internal optical lens surface, providing the vent passageways in peripheral locations about said internal optical lens surface by forming impressions into said surface and correspondingly increasing the density of said construction material bounding said impressions, and machining the lower portion of said form into a convex shape to embody said lens with an external optical lens surface preparatory to subsequent hydrophilic absorption of the water for conversion of said lens into a softened condition, whereby said high-density construction material bounding said

vent passageways resists flattening even in said softened condition of said lens.

4,353,850

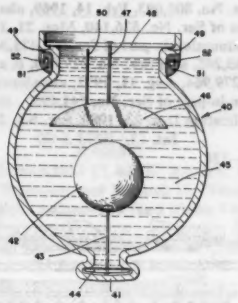
METHOD OF MAKING A BOWLING BALL

Gene W. MacDonald, Kent, Ohio, assignor to GMSG, Inc., Kent, Ohio

Division of Ser. No. 19,823, Mar. 12, 1979, Pat. No. 4,268,034. This application Feb. 29, 1980, Ser. No. 126,162

Int. Cl.[3] B29C *6/02*; B29D *3/00*

U.S. Cl. 264—25 4 Claims



1. A method of making a bowling ball in a mold comprising the steps of placing a member in the mold, filling the mold with a polymerizable mass having a specific gravity greater than the member so that the member will float within the polymerizable mass, selectively restraining the member so that the centroid thereof will be in the range of approximately three to approximately six and one-half inches from a point of reference on the outer surface of the bowling ball, suspending a weight block of greater specific gravity than the polymerizable mass in the mass to a depth in the range of approximately one-half inch to approximately three and one-quarter inches from said point of reference on the outer surface of the ball generally on the same axis as the member to effect with the member a selected degree of eccentricity in the bowling ball, effecting polymerization of the mass until solidification thereof, removing the mold by grinding the same away from the solidified mass, and forming the removed mass into a finished bowling ball.

4,353,851

ON-LINE RECLAIM METHOD

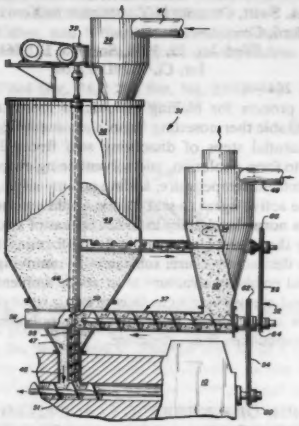
Jack F. Godfrey, and Charles L. Grant, both of Hazlehurst, Ga., assignors to Standard Oil Company (Indiana)

Continuation of Ser. No. 848,742, Nov. 4, 1977, abandoned. This application May 23, 1979, Ser. No. 41,606

Int. Cl.[3] B29C *29/00*

U.S. Cl. 264—37 3 Claims

1. An on-line process for reclaiming a portion of oriented and unoriented film produced on an extrusion line, said process comprising: entangling said oriented and unoriented film to form a collection thereof containing at least 25% by weight unoriented film; chopping said collection to form a chopped reclaim, positively transferring at least 1½ parts by weight of a virgin resin from a first container to a mixing zone in a second container while simultaneously transferring 1 part by weight of said chopped reclaim to said mixing zone of said second container; swirling said virgin resin and said chopped reclaim to form a mixture thereof; positively transferring said mixture through a conduit, to a plasticization zone which is within said extrusion line; and gravitationally transferring additional virgin resin from said first container to said plasticization zone



downstream from where said mixture enters said plasticization zone.

4,353,852

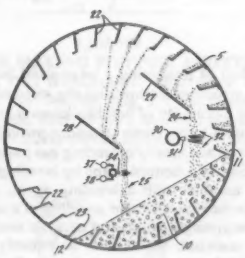
PELLETIZING METHOD AND APPARATUS

Samuel Y. Tse, Calgary, Canada, assignor to Procor Limited-Procor Limitee, Oakville, Canada

Division of Ser. No. 88,235, Oct. 25, 1979, Pat. No. 4,272,234. This application Jan. 26, 1981, Ser. No. 228,446

Int. Cl.[3] B01J *2/12*

U.S. Cl. 264—37 33 Claims



1. The method of maintaining within a predetermined range the temperature of a zone where solid particles falling through the air into a rotating bed of such particles are sprayed with a substance which adheres to the surface of the falling particles, comprising the steps of:

A. removing some of the particles from said bed;

B. wetting the removed particles with a liquid; and

C. dropping the wetted particles into said zone, whereby evaporation of the liquid from said wetted particles as they pass through said zone lowers the temperature of said zone.

4,353,853

METHOD FOR MAKING RETICULATED FOAM STRUCTURES

Joseph A. Swift, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1980, Ser. No. 171,561
Int. Cl.³ B29D 27/04
U.S. Cl. 264—41 9 Claims

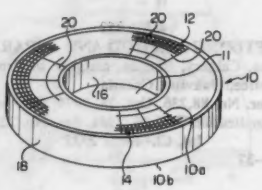
1. A process for making reticulated foam structure of a cross-linkable thermosetting fluoroelastomer which comprises: the sequential steps of dissolving said fluoroelastomer in a solvent to form a solution, said solvent being evaporatable at or about ambient temperature; adding an emulsifying vehicle and a surface active agent to said solution, said emulsifying vehicle having a normal volatility lower than that of said solvent, and forming the mixture into an emulsion; forming said emulsion into the desired structure; substantially removing said solvent from said emulsion structure at or about ambient temperature while said emulsifying vehicle is present; removing said vehicle from said structure; and curing the polymer structure to form a reticulated foam structure.

4,353,854

METHOD OF PRODUCING LARGE-SIZED CERAMIC HONEYCOMB STRUCTURE BODY BY INTEGRATION OF SMALL UNIT BLOCKS

Akira Oyamada, Yokosuka; Shin Fujii, Zama; Nobuhiko Okoshi, Tochigi; Satoshi Ambe, Yokosuka, and Shigeyoshi Nakagawa, Isesaki, all of Japan, assignors to Nissan Motor Company, Japan

Continuation of Ser. No. 34,072, Apr. 27, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,451
Claims priority, application Japan, May 2, 1978, 53-52350
Int. Cl.³ C04B 37/00
U.S. Cl. 264—63 18 Claims



1. A method of producing a large-sized body of a ceramic honeycomb structure, comprising the steps of:

integrating a plurality of unit blocks each having a prismatic shape and a honeycomb structure providing a number of continuous and axially extending gas passages into a large-sized body of a desired shape by bonding said unit blocks to one another with a bonding agent, said unit blocks being formed by extrusion molding of a ceramic composition comprising a powdered ceramic material, an organic binder material, which can be entirely converted into gaseous substances and dissipated by firing, and a solvent for said binder material and thereafter dried with resultant evaporation of said solvent, said bonding agent comprising only two essential components one of which is said organic binder material and the other is a liquid which serves as a solvent for said binder material;

drying said large-sized body so as to evaporate said liquid in said bonding agent;

heating the dried large-sized body to a first temperature so as to gasify and dissipate said binder material; and

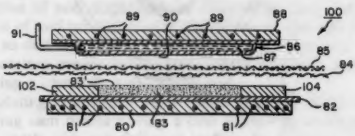
firing the heated large-sized body at a second temperature higher than said first temperature so as to cause sintering of said ceramic material constituting the integrated unit blocks thereby to convert the large-sized body into an entirely and homogeneously ceramic honeycomb structure body.

4,353,855

PROCESS FOR MAKING A STRESS-FREE PLASTIC ARTICLE

Armen Garabedian, 8-22 Astoria Blvd., Long Island City, N.Y. 11102

Division of Ser. No. 929,304, Jul. 31, 1978, Pat. No. 4,243,368, which is a continuation-in-part of Ser. No. 817,048, Jul. 19, 1977, Pat. No. 4,104,101, and a continuation-in-part of Ser. No. 647,832, Jan. 9, 1976, abandoned, which is a continuation of Ser. No. 424,654, Dec. 14, 1973, abandoned, which is a continuation of Ser. No. 141,495, May 10, 1971, abandoned, which is a division of Ser. No. 805,093, Feb. 14, 1969, abandoned, which is a continuation of Ser. No. 536,140, Mar. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 473,342, Jul. 20, 1965, Pat. No. 3,383,265, said Ser. No. 817,048, is a continuation of Ser. No. 279,964, Aug. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,495, , abandoned. This application Dec. 23, 1980, Ser. No. 219,430
Int. Cl.³ B27J 5/00
U.S. Cl. 264—126 3 Claims



1. The process for producing a stress free plastic article from plastic particles comprising the steps of providing a layer of said plastic particles, disposing a unitary microporous parting and air release means against said layer of plastic particles, placing said layer and said microporous parting and air release means between a first member and a flexible diaphragm, heating said plastic particles to at least their fusion temperature, applying a fluid pressure to said diaphragm to evenly impress a fluid-like pressure to said layer of particles with a force sufficient to cause the plastic particles to fuse to a coherent mass defining said plastic article and venting any gases in said layer of plastic particles through said microporous means during said heating and pressing and cooling and removing said fluid-like pressure from said fused plastic article.

4,353,856

PROCESS AND EMBEDDING SYSTEM FOR EMBEDDING TISSUE SAMPLES

Karl-Friedrich Mück, Wiesbaden; Lothar Post, Kelkheim, and Hannes Westen, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 190,974
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939582
Int. Cl.³ G01N 31/00; A01N 1/00
U.S. Cl. 264—240 6 Claims

1. In a process for embedding tissue samples in which the sample is embedded by polymerization, at temperatures of at most +20° C., of (meth)acrylate, optionally admixed with a plasticizer, in the presence of a low-temperature initiator system which contains an accelerator in addition to the agent which forms free radicals, the improvement of which comprises: treating first the tissue sample with a mixture of at least one monomer of an alkyl (meth)acrylate and a hydroxy alkyl (meth)acrylate, accelerator and/or agent which forms free radicals, the concentration of accelerator and/or agent which forms free radicals being greater in this first polymerization mixture than in a second polymerization mixture, said concen-

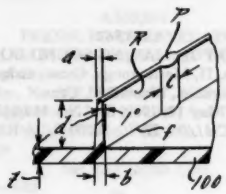
tration of accelerator and/or agent which forms free radicals being at least 2 to 10 times higher than the concentration in the second polymerization mixture; further treating said tissue with the second polymerization mixture of an alkyl (meth)acrylate and a hydroxyalkyl (meth)acrylate, the weight ratio of hydroxyalkyl (meth)acrylate to alkyl (meth)acrylate in a mixture with said initiator system not exceeding the value of 9:1, and polymerizing said mixture whereby an embedded tissue is recovered.

4,353,857

METHOD FOR MAKING PLASTIC PANEL AND PANEL

Donald J. Ray, Plymouth, and Kenneth H. Woodrich, Rochester, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 1, 1980, Ser. No. 117,728
Int. Cl.³ B29D *3/02*; B29G *1/00*
U.S. Cl. 264—258 32 Claims



1. A method for producing a compression molded, fiber reinforced, plastic panel comprising a plate having an outer surface and an inner surface bearing integrally molded reinforcing members, which method comprises:

A. providing a mold with heated first and second mold members that close to form a configuration for said panel, one of said mold members having a surface interrupted by rib-forming chambers that fill to form a rib pattern that rigidifies said panel, said chambers having a width about equal to or less than the thickness of said plate and a depth at least as large as said thickness;

B. introducing molding compound between said mold members in sufficient amount to form under heat and pressure said panel, said molding compound being in layers positioned one atop another, a first part of said layers comprising thermosetting resin and relatively short chopped fibers and the other part comprising thermosetting resin and relatively long chopped fibers;

C. causing said mold members to close upon said molding compound at a pressure in a relatively high range so as to cause flow of said molding compound between said mold members into said configuration whereby said relatively short fibers flow into said chambers;

D. reducing said pressure to a subsequent pressure in a relatively low range and permitting said molding compound to at least substantially cure at a pressure in said relatively low range;

E. parting said mold members;

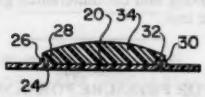
F. removing said panel from between said mold members.

4,353,858

METHOD FOR FORMING A BOSS UPON A THERMOPLASTIC POLYMER SURFACE AND RESULTING ARTICLE

Kenneth B. Gilleo, and Willard H. Kriebich, both of Sparta, Wis., assignors to Northern Engraving Corporation, Sparta, Wis.

Filed Dec. 24, 1980, Ser. No. 220,087
Int. Cl.³ B32B *3/30*
U.S. Cl. 264—268 19 Claims



1. A method for forming a boss upon an essentially planar thermoplastic polymer surface which comprises:

(a) heating the thermoplastic polymer surface to a temperature above the deformation temperature of the thermoplastic polymer and below the decomposition and melt stick temperatures of the thermoplastic polymer;

(b) impressing the thermoplastic surface, for from about 0.1 to about 10 seconds with a debossing die having at least one edge in the shape of a first pattern, to form a second pattern area on the surface defined and encompassed by at least one continuous self-connecting retaining dam on the surface, at least a portion of said dam being formed by said impressing by said die, said portion of said dam comprising at least one debossed region between at least two raised ridges having upper edges;

(c) introducing into the second pattern area, a liquid resin in a quantity sufficient to fill the second pattern area and insufficient to overflow the continuous dam, the liquid resin being solidifiable at a temperature below the deformation temperature of the thermoplastic polymer, the thermoplastic polymer, having reaction and solubility rates with the liquid resin which are sufficiently slow to prevent significant weakening of said thermoplastic polymer prior to solidification of the liquid resin; and

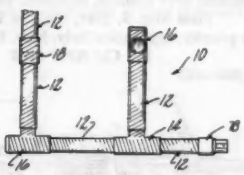
(d) while the upper edge of each such ridge is in an essentially horizontal plane, solidifying the liquid resin to form an elevated boss.

4,353,859

METHOD FOR MAKING FITTINGS AND COUPLINGS

Sherwin Palmer, 1711 Woodslea Dr., Flint, Mich. 48508

Division of Ser. No. 384,753, Aug. 1, 1973, abandoned. This application Mar. 4, 1977, Ser. No. 774,303
Int. Cl.³ B29D *23/03, 23/04*; B29C *17/14*
U.S. Cl. 264—506 3 Claims



1. A method of manufacturing a plastic ground drainage component comprising the steps of:

(a) molding a first plastic tubular member having a hollow interior, said first plastic tubular member being formed with a first closed end and a second substantially closed end;

(b) forming an inwardly directed double-entry helical thread

in the exterior and interior surfaces of said first plastic tubular member in at least one portion of said surfaces between said first end and said second end;

(c) forming circumferential guide lines on the exterior surface of said first plastic tubular member proximate said first end and proximate said second end of said first plastic tubular member;

(d) forming smooth portions on the exterior and interior surfaces of said first plastic tubular member between each said guide line and the adjacent helically-threaded portion; and

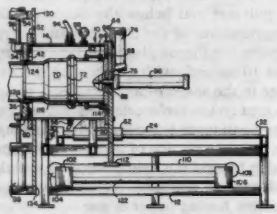
(e) severing along said circumferential guide line proximate said second end.

4,353,860

METHOD FOR PRESSURE FORMING PIPE BELLS

John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335

Division of Ser. No. 77,657, Sep. 21, 1979, Pat. No. 4,277,231.
This application Jun. 29, 1981, Ser. No. 278,441
Int. Cl.³ B29D *23/00*
U.S. Cl. 264—519 **7 Claims**



1. The method of forming a bell shape in a heated end of a length of plastic pipe comprising

positioning a shaped mandrel in the rear of a pressure chamber;

inserting the pipe end into an opening in the pressure chamber and over the shaped mandrel;

closing the opening about the pipe end and forming a sealed pressure chamber about the softened pipe end;

pressurizing the sealed pressure chamber and pressing the softened end against the mandrel;

setting the softened end against the mandrel for a sufficient time to set a bell shape in the softened end and then releasing the pressure; and

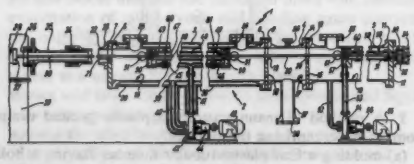
withdrawing the pipe end from the pressure chamber.

4,353,861

PROCESS AND PLANT FOR VULCANIZING A CONTINUOUS LENGTH OF CURABLE MATERIAL

Gustavo Caser, Gaglianico, Italy, assignor to General Engineering Radcliffe 1979 Limited, Radcliffe, England

Filed Mar. 9, 1981, Ser. No. 241,883
Claims priority, application Italy, Mar. 13, 1980, 67387 A/80
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—561 **12 Claims**



1. Apparatus for curing a continuous length of curable material comprising a first tubular body which defines a chamber for a heat exchange liquid, a second tubular body disposed inside the first tubular body and defining a curing chamber, inlet means leading into the tubular bodies, and outlet means leading from the tubular bodies arranged by permit a length of material to be cured to pass through the tubular bodies, first and second sealing means placed upstream and downstream respectively of the inlet and outlet means and operative to sealingly cooperate with a length of material, at least one tubular injector for injecting a heat exchange liquid into said second tubular body, heat exchange liquid supply means for the supply of heat exchange liquid to the or each tubular injector, means for heating at least a part of the first tubular body, means for feeding a pressurized fluid to the first tubular body and means for cooling the continuous cured length of curable material emerging in operation from the second tubular body.

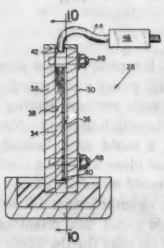
11. A method of curing a continuous length of curable material including the steps of supplying a heat exchange liquid to a first tubular body, pressurising the first tubular body, heating the heat exchange liquid in the first tubular body, feeding the heat exchange liquid from the first tubular body to an injector, injecting the liquid so fed into a second tubular body disposed within the first tubular body, simultaneously passing the continuous length of material through the second tubular body disposed within the first tubular body so that the heat exchange liquid passes over it, allowing the heat exchange liquid to drain back from the second tubular body to the first tubular body, and subsequently cooling the continuous length of material.

4,353,862

METHOD FOR MAKING SOUND BOARD

Charles W. Kaman, II, Marlborough, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed May 12, 1980, Ser. No. 149,243
Int. Cl.³ B29C *11/00, 27/10;* B29D *3/02;* B29G *7/00*
U.S. Cl. 264—571 **5 Claims**



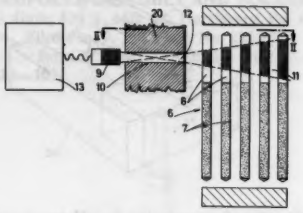
1. A method for making a sound board assembly for a stringed musical instrument comprising the steps of positioning a layer of finely woven fiber glass fabric in adhering face-to-face relation with a sheet of wood with threads of the fabric extending in generally parallel relation to the grain of the wood, temporarily adhering said sheet of wood to a first mold plate with said fabric facing away from said plate, disposing a second mold plate so that a narrow space is left between said second mold plate and said layer of fabric to form a mold cavity between said first mold plate and said second mold plate, disposing said mold plates so that major surfaces of said plates are vertically oriented, introducing a transparent, curable liquid resin into the lower part of the space between said fabric and said second mold plate, evacuating air from between said mold plates at the upper part thereof while the curable liquid resin is being introduced fill said cavity, curing said resin to bond said fabric to said wood, and removing said sound board assembly from the mold plates.

4,353,863

METHOD FOR LOCALIZING A LEAKING ROD IN A NUCLEAR FUEL ASSEMBLY

Leon G. Leenders, Mol, Belgium, assignor to Centre d'Etude de l'Energie Nucleaire, C.E.N., Brussels, Belgium

Filed Jul. 3, 1980, Ser. No. 165,812
Claims priority, application France, Jul. 6, 1979, 79 17579
Int. Cl.[3] G21C *17/00*
U.S. Cl. 376—251 24 Claims



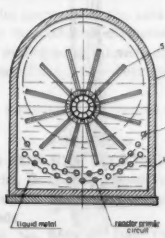
1. Method for localizing a leaking rod inside a nuclear fuel assembly, in which for each rod in an assembly, the radio-activity in at least two discrete rod rows in which said rod lies is measured and a leaking rod is localized by sensing a lowering of the radio-activity in the tested rows where said rod lies relative to the radio-activity in an identical row of non-leaking rods.

4,353,864

PRESSURE REGENERATOR

Paul Morcov, No. 12 i/S, Georg-Büchner-Weg, 6050 Offenbach, Fed. Rep. of Germany

Division of Ser. No. 967,551, Dec. 7, 1978, Pat. No. 4,307,684. This application Jan. 28, 1981, Ser. No. 229,248
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758619
Int. Cl.[3] G21D *1/00*
U.S. Cl. 376—402 4 Claims



1. A nuclear power plant comprising a nuclear reactor and a pressure regenerator, said pressure regenerator comprising:

(a) a housing defining a chamber and including heating means to heat a first sector of said chamber, the remaining sector of said chamber being cooler;

(b) an assembly mounted for rotation about an axis in said chamber, said assembly comprising a plurality of elongated, open-ended ducts arranged in an annular configuration about said axis and extending substantially parallel to said axis and a plurality of heat exchange means arranged radially about said annular arrangement of ducts, each of said heat exchange means being connected to one of said ducts to permit steam to circulate between each of said ducts and the associated heat exchange means; and

(c) an annular receiver head and an annular outlet head in sealing engagement with opposite ends of said plurality of ducts, respectively, said receiver and outlet heads being arranged to communicate with said plurality of ducts during rotation of said assembly;

(d) said heating means comprising a bath of liquid contained in said first sector of said chamber and conduit means immersed in said liquid and connected to said nuclear reactor for heating said liquid bath;

(e) whereby steam may be directed through said receiver head, said ducts, said plurality of heat exchange means and said outlet head and may be heated in said heat exchange means during passage of said heat exchange means through said heated first sector of said chamber.

4,353,865

BORON CONTAINING, IRON-MANGANESE-ZIRCONIUM MASTER-ALLOY

Alex E. Petrus, 3560 Ridge Rd., Cleveland, Ohio 44102

Filed Apr. 24, 1981, Ser. No. 257,216
Int. Cl.[3] C22C *16/00, 22/00, 30/00*
U.S. Cl. 420—422 4 Claims

1. A New Master-alloy composition for the addition of Boron to Steels comprised of the following broad ranges of alloying elements, including 5.0 to 50.0% Iron, 10.0 to 60.0% Mn, 5.0 to 55% Zr, 0.1 to 10.0% B, 0.1 to 5.0% C, with the balance residual elements in small percentages of less than 1.5%.

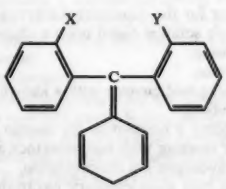
4,353,866

ACTIVATION OF HYPOCHLORITE BLEACHING OF DYES

Louis F. Wong, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 5, 1980, Ser. No. 204,120
Int. Cl.[3] B03D *9/02;* A61L *2/16*
U.S. Cl. 422—37 14 Claims

1. A method of treating a flush toilet, which comprises a flush tank and bowl, with a hypochlorite sanitizing agent each time the toilet is flushed, and providing a transitory visual signal to indicate the activity of the sanitizing agent in the bowl, the said method comprising the step of dispensing from separate dispensing means, into the flush water; (A) an aqueous solution of a compound which produces hypochlorite ion in aqueous solution; and (B) an aqueous solution comprising a dye, a compound which produces bromide ion in aqueous solution and a compound which produces ammonium ion in aqueous solution, thereby to form a solution in the toilet bowl at the end of the flush cycle which comprises from about 0.02 to about 0.45 ppm of said dye, from about 2 ppm to about 30 ppm available chlorine from said hypochlorite ion, from about 0.1 ppm to about 3 ppm bromide ion, from about 0.1 ppm to about 2 ppm ammonium ion and an available chlorine to dye ratio of from about 2:1 to about 150:1, said solution in said bowl having a pH of from about 6 to about 9.5, wherein said dye is selected from the group consisting of water-soluble, ortho-substituted triarylmethane dyes having in their structure the moiety



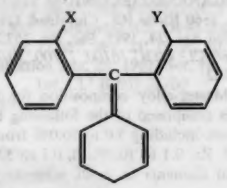
wherein X is selected from the group consisting of substituent groups other than hydrogen or methyl and Y is selected from the group consisting of X, hydrogen and methyl, and wherein said solution in said bowl is bleached from a colored state to a

colorless state within about 40 minutes after the end of said flush cycle.

9. An article of manufacture designed for placement below the high water line of the flush tank of a toilet comprising a flush tank and a bowl, said article comprising two dispensing means;

(A) the first dispensing means containing a solid composition which is soluble in water and comprises a compound which provides hypochlorite ions in aqueous solution, and

(B) a second dispensing means containing a water-soluble source of bromide ion, a water-soluble source of ammonium ion and a dye selected from the group consisting of water-soluble, ortho-substituted triarylmethane dyes which have in their structure the moiety



wherein X is selected from the group consisting of substituent groups other than hydrogen or methyl and Y is selected from the group consisting of X, hydrogen and methyl, said first dispensing means and second dispensing means each having means for receiving water from the flush tank when said flush tank refills after a flush, and for maintaining said received water in contact with the respective solid compositions in said first and second dispensing means during the quiescent period between flushes so as to form concentrated solutions of said compositions in said respective dispensing means between flushes, said first dispensing means and said second dispensing means each having means for releasing said concentrated solutions into the water in the flush tank when said water flows from the tank during flushing, said first and second dispensing means and the compositions therein cooperating to produce, in the toilet bowl at the end of the flush, a concentration of available chlorine of from about 2 ppm to about 30 ppm, a concentration of said dye of from about 0.02 ppm to about 0.45 ppm with a ratio of available chlorine to dye of from about 2:1 to about 150:1, a concentration of bromide ion of greater than 0.1 ppm, a concentration of ammonium ion of greater than 0.1 ppm and a pH of from about 6 to about 9.5.

4,353,867

METHOD AND APPARATUS FOR THE DETERMINATION OF SUBSTANCES IN BIOLOGICAL SOLUTIONS BY DIFFERENTIAL PH MEASUREMENT

Massimo Luzzana, Via Olgettina 60, Milan, Italy

Filed Sep. 30, 1980, Ser. No. 192,204
Int. Cl.³ G01N *33/84, 27/30*
U.S. Cl. 422—68 **10 Claims**

1. An analyzer for the quantitative determination of a substance in a simple solution based upon a change of pH of the solution comprising:

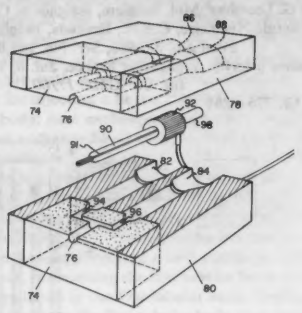
a sample cuvette,

means for filling said cuvette with a known volume of said sample solution,

means for adding a reactant to the sample solution in said cuvette for reacting with said substance and producing a change in hydrogen ion concentration,

a cell having two glass capillary electrodes each for the measurement of pH,

means for selectively transferring solution from said cuvette to said electrodes before and after addition of a reactant through a common supply conduit connected to said cell, said supply conduit being of an electrically conductive material and forming a liquid junction between said electrodes and being at machine ground potential,



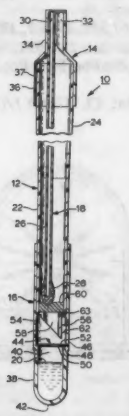
electronic means for processing the pH measurements made by said electrodes and producing a digital indication of the concentration of said substance in said sample solution.

4,353,868

SPECIMEN COLLECTING DEVICE

Joel A. Joslin, Sunset Hills, and Marshall T. Dennison, Creve Coeur, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed May 29, 1981, Ser. No. 268,217
Int. Cl.³ B01L *11/00*; C12M *1/30*
U.S. Cl. 422—101 **13 Claims**



1. A specimen collecting and transporting device comprising a longitudinally extending sleeve container member including a removable cap for selectively closing and opening one end of said container member, a swab in said container member including a rod connected adjacent one end thereof to said cap, and an absorbent tip connected to the opposite end of said rod, the opposite end of said container member having an opening therethrough, and seal piercing means extending from said container member opposite end, fluid flow metering means covering said opening and being in contact with said absorbent tip, a reservoir member having a sleeve receiving an opposite end portion of said container member in longitudinal slidable relation therewith, a reservoir chamber having a closed bottom end, an upper open end, a seal closing said upper open end of said chamber, and a liquid culture-sustaining medium in said chamber, and means including abutment means on one of said

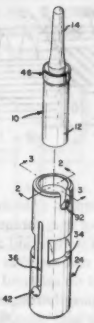
members engagable with the other of said members for locating said container member in a position relative to said reservoir member wherein said piercing means is above said seal, said container and reservoir members being relatively slidable to move said piercing means through said seal and connect said opening and absorbent pad in fluid communication with said medium and thereby wet said absorbent tip.

4,353,869

AMPOULE ASSEMBLY AND HOLDER

Richard U. Guth, 439 N. 46th St., Harrisburg, Pa. 17111

Filed Jan. 9, 1981, Ser. No. 223,757
Int. Cl.³ B65D *1/02*; C01G *9/00*
U.S. Cl. 422—102 **10 Claims**



1. The combination of an ampoule having a body, a tip and a reduced diameter neck joining the tip and body wherein the improvement comprises an annular collar formed from a stiffly resilient material having a slit extending through the circumference thereof, said collar being fitted around the ampoule neck with the ampoule body and tip extending to either side of the collar, the interior opening of the collar being normally smaller than the exterior of the tip, the collar including an inner edge engaging the minimum diameter portion of the neck when the slit is relatively closed to form a fulcrum for breaking the tip away from the ampoule body, said collar being moveable over said tip to the reduced diameter neck by relatively opening said slit to enlarge the interior opening of the collar and permit movement of the collar over the ampoule tip to the neck.

4,353,870

INSTALLATION FOR PROTECTING OF REACTORS

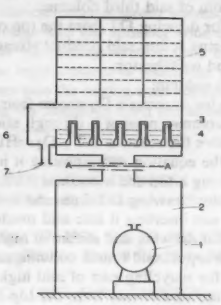
Cornelis M. Munnichs, Born, and Theodorus F. I. Bookelmann, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation of Ser. No. 968,795, Dec. 12, 1978, abandoned, which is a continuation of Ser. No. 801,244, May 27, 1977, abandoned. This application May 8, 1981, Ser. No. 261,798
Claims priority, application Netherlands, May 29, 1976, 7605817
Int. Cl.³ B01F *3/04*
U.S. Cl. 422—129 **8 Claims**

1. Apparatus for the protection of the atmosphere from a sudden inadvertent escape of harmful gases from a chemical reactor, said apparatus comprising the combination of reactor enclosing means, liquid containing means and connecting means between said reactor enclosing means and said liquid containing means wherein:

said reactor enclosing means define an enclosed space surrounding said reactor, and are adapted to contain said escaping gases, and to withstand the static and dynamic pressure required for the introduction and flow of said gases into said liquid containing means;

said liquid containing means are adapted to contain a liquid in sufficient depth and volume to take up by absorption, dissolution, condensation or reaction all such gases which may inadvertently escape from said chemical reactor, and to provide for the introduction of said gases into said liquid containing means near the bottom thereof; and



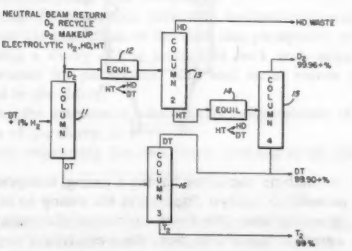
said connecting means provide open communication between said enclosed space and said liquid containing means, and are adapted to guide the flow of said gases into said liquid containing means near the bottom thereof.

4,353,871

HYDROGEN ISOTOPE SEPARATION

John R. Bartlit, Los Alamos, N. Mex.; William H. Denton, Abingdon, Great Britain, and Robert H. Sherman, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 10, 1979, Ser. No. 37,603
Int. Cl.³ B01D *3/00*; F25J *3/02*
U.S. Cl. 422—159 **1 Claim**



1. An apparatus for hydrogen isotope distillation separating a feed stream of about 50% deuterium and about 50% tritium, the streams also containing on the order of 1% hydrogen, into four product streams, a tritium-free stream of HD for waste disposal, a stream of high-purity D_2, a stream of DT, and a stream of high purity tritium, said apparatus comprising:

(a) a first column;

(b) a first equilibrator;

(c) said first column having a top and a bottom and an input into which said feed stream is directed for depletion of the top stream in DT and T_2 and for subsequent splitting of the HT molecule in said first equilibrator in the presence of excess D_2 and depleted HT into HD and DT according to the reversible reaction $HT+D_2 \rightleftarrows HD+DT$;

(d) a second column;

(e) means for drawing a D_2 rich top stream from said top of said first column through said first equilibrator and into said second column having a top and a bottom;

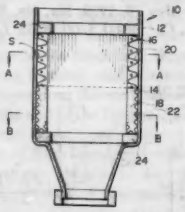
(f) means for drawing from the top of said second column said tritium free stream of HD for waste disposal;
(g) a third column having a top and a bottom;
(h) means for drawing DT from the bottom of said first column and inputting it into said third column;
(i) means for drawing said stream of high purity tritium from the bottom of said third column;
(j) means for drawing DT from the top of said third column and inserting it into said product stream of DT;
(k) a second equilibrator;
(l) a fourth column;
(m) means for drawing a D_2 stream from the bottom of said second column, passing it through said second equilibrator to drive the reaction $HT+D_2 \rightleftarrows HD+DT$ to the right side of the equation and inputting it into said fourth column having a top and a bottom;
(n) means for drawing DT from the bottom of said fourth column and inserting it into said product stream of DT;
(o) means for drawing said stream of high-purity D_2 product from the top of said fourth column; and
(p) means for recycling part of said high-purity D_2 product stream into said stream from the top of said first column immediately before said first equilibrator to drive the reaction to the right side of the equation $HT+D_2 \rightleftarrows HD+DT$.

4,353,872

CATALYTIC CONVERTER

Minoru Midorikawa, Koganei, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,069
Claims priority, application Japan, Mar. 7, 1980, 55-28831[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 422—179 **4 Claims**



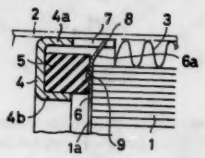
1. A catalytic converter having a casing, comprising:
a monolithic catalyst disposed in the casing so as to form a space between the inner surface of the casing and the outer surface of said monolithic catalyst;
a gas seal member disposed around a part of the outer surface of said catalyst, said gas seal member being formed of a heat-resistant and expandable sheet material selected from the group consisting of vermiculite, quartz, and asbestos;
a wire netting disposed around the remaining part of the outer surface of said catalyst and interposed between the inner surface of the casing and the outer surface of said catalyst; and
a protector member interposed between the inner surface of the casing and the outer surface of said gas seal member, said protector member being integral with said wire netting and made of the same material as that of said wire netting, said protector member being an elongate section extending from said wire netting and forming part of said wire netting, said elongate section being so flattened as to readily enter a narrow space between the outer surface of said gas seal member and the inner surface of the casing, the outer surface of said elongate section being substantially at the same level as that of said wire netting, the free end part of elongate section being so bent as to wrap the end section of said gas seal member.

4,353,873

SUPPORT APPARATUS FOR CATALYST BLOCK

Yutaka Noritake, Kawagoe; Ikuo Kajitani, Hanno, and Yutaka Hirayama, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,265
Claims priority, application Japan, Apr. 30, 1980, 55-58272[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 422—179 **1 Claim**



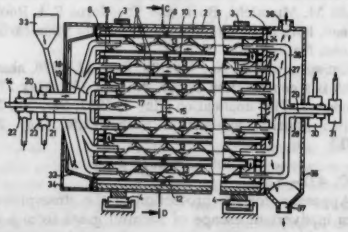
1. A device for supporting a cylindrical catalyst block having an end face, comprising in combination: a casing, an axially extending tubular cushion within said casing and encircling the catalyst block, an annular end member fixed within said casing, an annular cushion carried on said end member, a ring member having a frustro-conical peripheral portion, said ring member being interposed between said annular cushion and said end face of said catalyst block, and interengaging parts comprising a projection on said peripheral portion of said ring member received in a recess on said annular end member for preventing rotation of said ring member with respect to said casing.

4,353,874

ROTARY TUBE REACTOR FOR THE THERMAL TREATMENT OF MATERIAL

Wolfgang Keller, Bergisch-Gladbach, and Wolfgang Weiss, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,948
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914964
Int. Cl.³ B01J *19/18*
U.S. Cl. 422—193 **8 Claims**



1. In a rotary tube reactor for the thermal treatment of material in the form of powdered to lumpy solid material and/or substances in the form of liquid, with evolution of gases and optionally the supply of other substances, having a bundle of axially parallel tubes which are mounted in plates arranged perpendicularly thereto, wherein the individual tubes are joined together to form at least one treatment line whose beginning is provided with material supply means and whose end

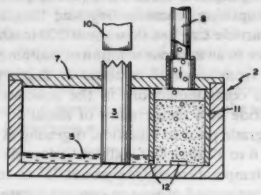
is supplied with a material outlet, the improvement wherein: the treatment line includes means dividing same into individual sections forming gas chambers which are sealed from each other and capable of being maintained at different pressures relative to each other, wherein each section has at least one conveying element rotatable therewith to convey material through the section, a gas outlet and adjacent sections are joined together by material passages.

4,353,875

APPARATUS FOR GROWING CRYSTALLINE MATERIALS

Paul J. Yancey, Matthews, N.C., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 958,089, Nov. 6, 1978, Pat. No. 4,269,652.
This application Sep. 2, 1980, Ser. No. 183,518
Int. Cl.³ C30B *15/34*
U.S. Cl. 422—249 **1 Claim**



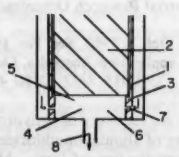
1. In an apparatus for growing crystalline material from a melt comprising a crucible for maintaining a reservoir of molten material from which the crystal is drawn and furnace for heating a solid supply of said material; the improvement which comprises providing an inner container to hold solid particulate material said container having one or more shallow slots at the bottom thereof to permit exiting of liquid therethrough to the crucible, said slots communicating directly with said reservoir of molten material, a product-shaping member disposed in said crucible, and a capillary passageway extending from the bottom of said crucible to the top end surface of said product-shaping member.

4,353,876

APPARATUS FOR MIXING CHEMICAL PRODUCTS UNDER RUNNING WATER

Vincent Ballu, Epernay, and Remi Perret, Meyzieu, both of France, assignors to Rhodic, Ecully, France

Filed Apr. 23, 1980, Ser. No. 143,144
Claims priority, application France, Apr. 23, 1979, 79 11186
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—263 **9 Claims**



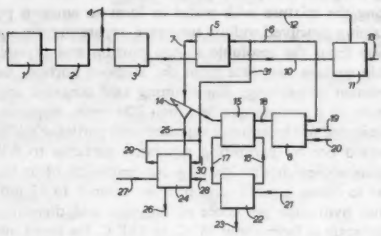
1. In a device for homogeneously mixing chemical products with water in which the chemical product is embodied in a water-splittable cartridge, said device comprising an enclosure and means subdividing the enclosure into a magazine dimensioned to receive the cartridge and a mixing chamber with one side of the magazine open to the mixing chamber, said mixing chamber having a low height relative to the magazine diameter, stop means positioned to engage the cartridge to retain the cartridge within the magazine with a free surface of the cartridge exposed to the mixing chamber, said mixing chamber being formed of a splitting zone and a homogenization zone with the splitting zone adjacent the magazine, an outlet in communication with the homogenization zone, at least one inlet in communication with the mixing chamber for the introduction of water into the mixing chamber for engagement with the free surface of the cartridge whereby chemical product is split from the cartridge into the splitting zone and homogenized with water in the homogenization zone before issuing from the outlet, the improvement in which the inlets for the introduction of water into the mixing zone are situated beyond the plane separating the magazine from the mixing chamber.

4,353,877

EXTRACTION PROCESS

John S. Rendall, Rosedene, Branksome Ave., Stanford-le-Hope, Essex, England

Filed Nov. 27, 1978, Ser. No. 963,777
Claims priority, application United Kingdom, Mar. 13, 1978, 9811/78
Int. Cl.³ C01G *43/00*; C01B *25/01*
U.S. Cl. 423—6 **12 Claims**



1. A process for the extraction of phosphoric acid and metal values from phosphate rock comprising:

acidulating the phosphate rock with hydrochloric acid to convert the phosphate of the rock into phosphoric acid,

contacting a slurry of the acidulated rock with selective extractants for phosphoric acid and metal values contained in the slurry;

removing the extractants substantially independently of the solids of the slurry; and

separately recovering the phosphoric acid and metal values.

4,353,878

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, Athens; Marie B. Terlizzi, Monroeton, and Brice E. Martin, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,407
Int. Cl.³ C01G *49/00*
U.S. Cl. 423—53 **4 Claims**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in concentrated sodium hydroxide to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing sodium tungstate from the aqueous portion, the improvement comprising: comminuting said tungsten ore concentrate to a particle size less than 325 mesh, adding said comminuted ore to aqueous sodium hydroxide at a concentration of at least 10 molar and digesting in the presence of about 6 to 17 moles of

sodium hydroxide per mole of tungsten at a temperature of from about 75° C. to 150° C. for a sufficient period of time to convert substantially all of the tungsten values to dissolvable sodium tungstate, and diluting the digested mixture to reduce the sodium hydroxide concentration to between about 4.5 and 5.5 molar at a temperature below about 90° C. to substantially dissolve all the dissolvable sodium tungstate.

4,353,879

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, and Brice E. Martin, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,409
Int. Cl.³ C01G *49/00*
U.S. Cl. 423—53 **3 Claims**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in concentrated sodium hydroxide to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing soluble sodium tungstate from the aqueous portion, the improvement comprising: comminuting said tungsten ore concentrate to a particle size less than 200 mesh, dispersing the comminuted ore to separate agglomerated particles; adding the dispersed ore by permitting separated particles to fall into aqueous sodium hydroxide at a concentration of at least 10 molar to obtain a mole ratio of from about 6 to 17 moles of sodium hydroxide per mole of tungsten and digesting at a temperature of from about 75° C. to 150° C. for about one-half hour to about 2 hours to convert substantially all of the tungsten values to dissolvable sodium tungstate, and diluting the mixture to reduce the sodium hydroxide concentration to between about 4.5 and 5.5 molar at a temperature below about 90 degrees centrigrade to substantially dissolve all the sodium tungstate.

4,353,880

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, Athens, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,410
Int. Cl.³ C01G *49/00*
U.S. Cl. 423—53 **1 Claim**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in the presence of about 6 to 17 moles of sodium hydroxide per mole of tungsten to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing sodium tungstate from the aqueous portion, the improvement comprising: drying the insoluble sludge portion, comminuting the dried sludge to a particle size less than about 200 mesh, and recycling said comminuted sludge to said diluting step wherein said comminuted sludge is contacted with sodium hydroxide between about 4.5 and 5.5 molar at a temperature below about 90° C. to substantially dissolve sodium tungstate present in said sludge.

4,353,881

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, Athens; Martin C. Vogt, Monroeton, and Brice E. Martin, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,408
Int. Cl.³ C01G *41/00*
U.S. Cl. 423—58 **1 Claim**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in concentrated sodium hydroxide to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing soluble sodium tungstate from the aqueous portion, the improvement comprising: comminuting said tungsten ore concentrate to a particle size less than about 200 mesh, adding the comminuted ore to an aqueous solution of sodium hydroxide at a temperature from about 10 to about 30 degrees centigrade dispersing said comminuted ore in the aqueous solution of sodium hydroxide at a temperature of about 10 to about 30 degrees centrigrade prior to digestion, digesting at a mole ratio of from about 6 to 17 moles of sodium hydroxide per mole of tungsten, at a temperature of from about 75° C. to about 150° C. for a sufficient period of time to convert substantially all of the tungsten values to dissolvable sodium tungstate, diluting the mixture to reduce the sodium hydroxide concentration to between about 4.5 and 5.5 molar at conditions retarding reversal of dissolvable sodium tungstate forming insoluble tungsten values and at a temperature below about 90° C. to substantially dissolve all said dissolvable sodium tungstate, crystallizing said sodium tungstate and separating sodium tungstate crystals from a remaining aqueous portion containing excess sodium hydroxide, treating said remaining portion to concentrate said excess sodium hydroxide, cooling and recycling said concentrated remaining portion of sodium hydroxide for dispersing additional comminuted ore.

4,353,882

PURIFICATION OF ALUMINUM CHLORIDE

Ernest Foley, East Burwood; Lionel J. Rogers, Rockbank; Henry J. Gardner, East Ringwood, and Louis J. Wibberley, Newcastle, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Oct. 3, 1980, Ser. No. 193,493
Claims priority, application Australia, Oct. 3, 1979, PE0760
Int. Cl.³ C01F *7/62*; C01G *49/10*
U.S. Cl. 423—111 **12 Claims**

1. A method for the recovery of anhydrous aluminium chloride from a mixture of aluminium chloride with ferrous chloride which is essentially free of ferric chloride, which comprises subjecting a liquid mixture of said aluminium chloride with ferrous chloride to a reduction in pressure, the conditions being such as to bring about dissociation of compounds formed between aluminium chloride and ferrous chloride present in the mixture, thereby to form an aluminium chloride-rich vapour and an iron chloride-rich solid and

then separating collecting the iron- and aluminium-rich components at conditions under which the extent of reformation of compounds between aluminium chloride and ferrous chloride is minimized.

4,353,883

SELECTIVE EXTRACTION OF COBALT(II) FROM AQUEOUS SOLUTIONS WITH PHOSPHINIC ACID EXTRACTANTS

William A. Rickelton, Niagara Falls; Allan J. Robertson, Thorold, both of Canada, and David R. Burley, Kinnelon, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 182,296, Aug. 28, 1980, abandoned. This application May 14, 1981, Ser. No. 263,537

Int. Cl.³ C01G 57/00

U.S. Cl. 423—139 31 Claims

8. A process for the extraction of cobalt(II) from an aqueous cobalt(II)-bearing solution containing nickel(II) and having a pH of about 4 to 6 comprising contacting said solution with an extraction solvent at about 0° to 80° C., thereafter separating the aqueous phase from the cobalt(II)-loaded phase wherein said extraction solvent comprises from about 2 to 99 parts by volume of an organic-soluble phosphinic acid having at least 2 carbon atoms or an organic-soluble salt thereof, from about 98 to 1 parts by volume of a water-immiscible organic diluent and from 0 to about 15 parts by volume of a phase modifier.

19. A process according to claim 8 with the additional steps of contacting the cobalt(II)-loaded extraction solvent with an aqueous solution of a mineral acid at about 0°–80° C. to strip the cobalt(II) into the aqueous phase; separate the cobalt(II)-containing aqueous phase; and, recovering the stripped extraction solvent for subsequent reuse.

4,353,884

METHOD FOR SYNTHESIZING BORACITIES

Gary A. Wolf, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 9, 1981, Ser. No. 310,247

Int. Cl.³ C01B 35/06

U.S. Cl. 423—277 4 Claims

1. A method for the production of boracites of the formula $M_3B_7O_{13}X$ wherein M is a divalent metal and X is a halogen, comprising:

(a) dissolving $M(CH_3COO)_2$, H_3BO_3, and HX in water;

(b) evaporating the solution from step (a) to dryness;

(c) heating any solid residue from step (b) under pressure in an inert atmosphere.

4,353,885

TITANIUM DIBORIDE ARTICLE AND METHOD FOR PREPARING SAME

Howard H. Hoekje, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 11,596, Feb. 12, 1979, Pat. No. 4,282,195, which is a continuation-in-part of Ser. No. 546,838, Feb. 3, 1975, abandoned. This application Mar. 9, 1981, Ser. No. 241,986

Int. Cl.³ C01B 35/04

U.S. Cl. 423—289 22 Claims

1. A process for preparing submicron refractory metal diboride powder of the metals titanium, zirconium and hafnium, which powder is capable of being cold formed and sintered to a density of at least 90 percent of its theoretical density, by gas phase reaction of the halide of the corresponding metal and boron source reactants in the presence of hydrogen in a reactor, which comprises projecting a plasma heated hydrogen gas stream into a reaction zone in the reactor, introducing substantially pure gaseous metal halide and boron source reactants into said reaction zone, the temperature of the reactants so introduced being below the boride forming reaction temperature in the reaction zone and the heat content of the hydrogen gas stream and reactants being sufficient to establish refractory metal boride forming reaction temperatures in said reaction zone, reacting said metal halide and boron source reactants in the reaction zone in the substantial absence of oxygen and a source of carbon, and removing solid, submicron refractory metal boride powder from the reactor, at least 90 percent of the particles of which have a nominal sectional diameter of less than one micron, said particles having a number median particle size of between about 0.08 and 0.6 microns and being tabular to equidimensional hexagonal crystals with well developed faces.

11. A titanium diboride article of manufacture having a density of at least 90 percent of the theoretical density of titanium diboride and a carbon content of less than 0.1 weight percent, which article is prepared by hot pressing, hot isostatic pressing, or cold forming and sintering submicron titanium diboride powder having a surface area of between about 3 and 25 square meters per gram and containing less than 0.4 weight percent metal impurities and less than 0.1 weight percent carbon, the nominal sectional diameter of at least 90 percent of the titanium diboride particles of said powder being less than one micron, said particles being tabular to equidimensional hexagonal crystals having well developed faces and a number median article size of between about 0.08 and 0.6 microns.

4,353,886

METHOD FOR DETECTING ORGANIC VAPORS

Herbert R. Lukens, Jr., and Colin B. Williams, both of La Jolla, Calif., assignors to IRT Corporation, San Diego, Calif.

Filed May 5, 1980, Ser. No. 146,476

Int. Cl.³ G01N 33/00

U.S. Cl. 424—1 20 Claims

1. A method of detecting the presence of a particular organic material within a region comprising;

providing a test plate having a surface coated with an antibody for a specific organic material;

exposing said test plate to the atmosphere of a region suspected of carrying vapors of said organic material;

and,

observing changes in optical properties of said surface indicating the presence of said organic material.

4,353,887

DIVISIBLE TABLET HAVING CONTROLLED AND DELAYED RELEASE OF THE ACTIVE SUBSTANCE

Hans Hess, Binningen, and Carlo Voellmy, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,028

Claims priority, application Switzerland, Aug. 16, 1979, 7514/79; May 21, 1980, 3959/80

Int. Cl.³ A61K 9/20, 9/22, 9/24, 9/28

U.S. Cl. 424—15 7 Claims

1. A divisible tablet having controlled and delayed release of the active substance, characterised in that it consists of a compact, with or without a coating having no influence on the release of said active substance, said compact being formed by pressing a granulate of at least one active substance and an adjunct composition which effects the controlled and delayed release of the active substance to form a granulate-retard matrix, with or without one or more additional granulate adjunct compositions which contain an active substance or do not contain such active substance and are arranged in longitudinal layers, the compact being of an oblong shape in which the ratio of length to width to depth is approximately 2.5 to 5:approximately 0.9 to 2:1 and the width constitutes at most $\frac{1}{3}$ of the length, and in which one or more deep dividing groves are present which run perpendicularly to the length and depth and have a total depth of from approximately $\frac{1}{4}$ to approximately $\frac{1}{2}$ of the depth of the tablet, but are at least so deep that one fracture surface area multiplied by the number of possible fragments constitutes a maximum of 15% of the surface area of the undivided tablet, the base and top faces independently of one another are planar or are convexly curved about the longitudinal axis or about parallels to this axis, the side faces are planar, the end faces can be of any shape and with or without bevelled or rounded edges.

4,353,888
ENCAPSULATION OF LIVE ANIMAL CELLS

Michael V. Sefton, 21 Prince Charles Dr., Toronto, Ontario, Canada (M6A 2H1)

Filed Dec. 23, 1980, Ser. No. 219,238
Int. Cl.[3] A61K *9/28, 9/00*
U.S. Cl. 424—25 10 Claims

1. A process for preparing micro-encapsulated viable mammalian cells for introduction to host, living mammalian tissue, which comprises:

(a) preparing an aqueous suspension of said viable mammalian cells;

(b) dispersing the aqueous suspension of cells in a relatively high molecular weight, hydrophobic, non-toxic, non-cell-penetrating liquid and agitating the dispersion to form an emulsion having a discontinuous aqueous phase comprising droplets containing small numbers of said viable cells;

(c) adding to the emulsion so formed a solution of a biocompatible, water-insoluble polymer in a polar, non-toxic liquid solvent for said polymer;

(d) precipitating the polymer at the interface of the aqueous, cell-containing droplets and the hydrophobic phase so as to encapsulate some at least of the cells in said droplets with a membrane of said polymer which will allow passage of cell substrates and secretions, but will prevent the passage of larger molecules; and

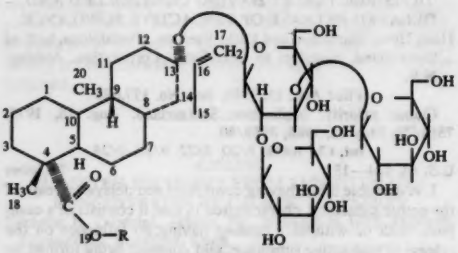
(e) separating the bulk of the hydrophobic medium from the encapsulated cellular material.

4,353,889
REBAUDIOSIDE ANALOGS

Grant E. DuBois, Palo Alto, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Jun. 11, 1981, Ser. No. 272,799
Int. Cl.[3] A61K *31/70;* C07H *15/24*
U.S. Cl. 424—48 17 Claims

1. A nonglycosidic polar ester compound of rebaudioside C having the structure



wherein R is a physiologically acceptable noncarbohydrate polar organic group that is α-carbon oxygen free and that contains from 1 to 10 carbon atoms inclusive.

16. A sweet comestible comprising an edible material admixed with an effective sweetening amount of the compound of claim 1.

4,353,890
STABILIZATION OF CARRAGEENAN-CONTAINING TOOTHPASTE

George V. Scott, Scotch Plains, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

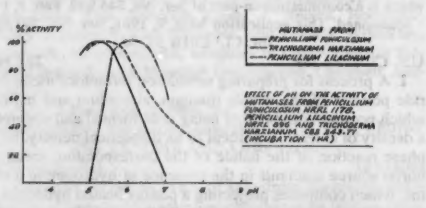
Filed Oct. 24, 1979, Ser. No. 87,651
Int. Cl.[3] A61K *7/16, 41/00;* A61L *2/12;* B01J *1/10*
U.S. Cl. 424—49 7 Claims

1. In a closed-system method for raising the temperature of a gel composition containing a carrageenan gelling agent to at least the gel-sol transition temperature of the gelling agent and thereby stabilizing a gel composition containing a carrageenan gelling agent selected from the group consisting of kappa carrageenan, lambda carrageenan, iota carrageenan, kappa-iota carrageenan, kappa-lambda carrageenan, sodium salt of kappa carrageenan, potassium salt of kappa carrageenan, calcium salt of kappa carrageenan, sodium salt of lambda carrageenan, potassium salt of lambda carrageenan, calcium salt of lambda carrageenan, sodium salt of iota carrageenan, potassium salt of iota carrageenan, calcium salt of iota carrageenan and mixtures thereof, and mixtures of any such carrageenan gelling agent with a gelling agent selected from the group consisting of sodium carboxymethyl cellulose, hydroxyethylcarboxyethyl cellulose, polyvinyl pyrollidone, gum tragacanth, hydroxypropylmethyl cellulose, methyl cellulose, starch, starch glycolate, polyvinyl alcohol, sodium alginate, carob bean gum, locust bean gum, and hydrophilic colloidal hydroxyvinyl polymers, and mixtures thereof, a lossy dielectric material selected from the group consisting of water and other polar materials, and a flavoring material subject to loss of volatile component and/or deterioration, causing flavoring differences, if overheated, which composition tends to decrease in viscosity when subjected to mechanical working at room temperature, which decrease in viscosity is avoidable to a significant extent by avoiding working of the gel composition when the temperature thereof is below the gel-sol transition temperature of the carrageenan gelling agent, and which composition is one which can be conventionally heated to above the gel-sol transition temperature of the carrageenan gelling agent to increase the viscosity of the gel obtained on subsequent cooling, the improvement which consists essentially of the steps of directing microwave radiation onto such composition in a closed system, over a period of less than five minutes for bulk treatments and no more than two minutes for in-line treatments, at a frequency in the range of 0.8 to 3 gigahertz, in such a quantity as to heat the composition, due to the effect of the microwave radiation on the lossy dielectric component of the gel composition, and raise the temperature thereof to at least the gel-sol transition temperature of the carrageenan, and quiescently cooling the composition to room temperature.

4,353,891
MUTANASE

Bernhard Guggenheim, 25 Alfred-Escherstrasse, and Hans-Rudolf Muhlemann, 8 Beustweg, both of Zurich, Switzerland

Filed Oct. 19, 1971, Ser. No. 190,621
Claims priority, application United Kingdom, Oct. 26, 1970, 50712/70
Int. Cl.[3] A61K *7/28;* C12N *9/24*
U.S. Cl. 424—50 8 Claims


% ACTIVITY
MUTANASE FROM
PENICILLIUM FUNICULOSUM
TRICHODERMA HARZIANUM
PENICILLIUM LILACINUM
EFFECT OF pH ON THE ACTIVITY OF MUTANASES FROM PENICILLIUM FUNICULOSUM NRRL 1178, PENICILLIUM LILACINUM NRRL 896 AND TRICHODERMA HARZIANUM CBS 343.71 (INCUBATION 1 HR.)

1. A fermentation process for producing an enzyme capable of selectively attacking a streptococci derived alpha-1,3 glucosidic bonded glucan which comprises oxidizing and reducing a streptococci derived dental plaque glucan characterized by at least 50% alpha-1,3 glucosidic bonds to destroy the alpha-1,6 bonds therein, leaving a glucan which contains almost exclusively alpha-1,3 glucosidic bonds, aerobically cultivating a microorganism thereon, and thereafter recovering the enzyme produced extracellularly by the microorganism from the fermentation broth.

4,353,892

FLUORIDE PREPARATIONS CONTAINING SURFACE-ACTIVE AGENTS

Vera B. Caslavsky, Lexington, and Poul Gron, Needham, both of Mass., assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Aug. 13, 1981, Ser. No. 292,496
Int. Cl.³ A61K 7/18
U.S. Cl. 424—52 24 Claims

1. A composition for use in the oral cavity to increase fluorapatite formation in teeth enamel, which composition comprises:

(a) a dental-caries-inhibiting amount of a water-soluble fluoride compound; and

(b) a fluoroalkyl surfactant in an amount to increase the fluorapatite formation of the teeth enamel, the surfactant having the structure R_f—A—Z, wherein R_f represents a perfluoroalkyl group having the formula $CF_3(CF_2)_n$—, wherein n is 5 to 11, A represents a hydrocarbon linking group and Z represents a hydrophilic group.

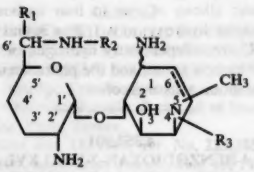
4,353,893

KA-6606 AMINOGLYCOSIDES ANTIBIOTICS AND COMPOSITIONS THEREOF

Isamu Watanabe, Higashimurayama; Takashi Yamaguchi, Seki; Kazuhiro Kamiya, and Toshihito Mori, both of Higashimurayama, all of Japan, assignors to Kowa Company, Ltd., Aichi, Japan

Filed May 20, 1981, Ser. No. 265,562
Claims priority, application Japan, May 22, 1980, 55-67084; Jun. 17, 1980, 55-80842
Int. Cl.³ A61K 31/71; C07H 15/22
U.S. Cl. 424—180 3 Claims

2. An antibiotic composition which comprises an antibiotically effective amount of a compound of the formula:



wherein R_1 and R_2 are different and each represents a hydrogen atom or a methyl group, R_3 represents a hydrogen atom, or a group represented by the formula —$COCH_2NHR'$ in which R' is a member selected from the group consisting of a hydrogen atom, —CH=NH and

and the symbol ==== between the carbon atoms at the 5- and 6-positions represents a single or double bond, and a pharmaceutically acceptable diluent or carrier.

4,353,894

5-IMINODOXORUBICIN

Edward M. Acton, Menlo Park, and George L. Tong, Cupertino, both of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 201,522, Oct. 27, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,056
Int. Cl.³ A61K 31/70; C07H 15/24
U.S. Cl. 424—180 3 Claims

1. 5-Iminodoxorubicin and its pharmaceutically acceptable acid addition salts.

3. A dosage unit of a pharmaceutical composition for treating leukemia in a warm-blooded animal comprising an amount within a range of from about 0.1 to about 500 mg per dosage unit, therapeutically effective to ameliorate leukemia, of at least one compound selected from the group consisting of 5-iminodoxorubicin and its pharmaceutically acceptable acid addition salts, together with a pharmaceutically acceptable, nontoxic, sterile carrier or diluent therefor.

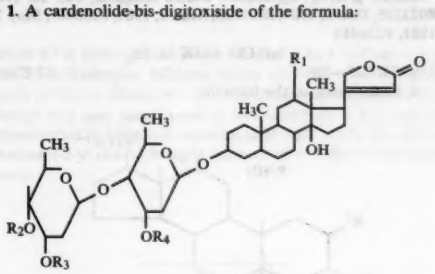
4,353,895

CARDENOLIDE-BIS-DIGITOXOSIDE ALKYL COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Wolfgang Schaumann, Heidelberg; Fritz Kaiser, Lampertheim; Wolfgang Voigtländer, Weinheim; Edgar Hoyer, and Klaus Koch, both of Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,442
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034658
Int. Cl.³ A61K 31/705; C07J 19/00
U.S. Cl. 424—182 8 Claims

1. A cardenolide-bis-digitoxiside of the formula:



in which

R_1 is a hydrogen atom, a hydroxyl group or an acyloxy radical containing up to 3 carbon atoms, and

R_2, R_3 and R_4 each independently is a hydrogen atom or, an acyl or alkyl radical containing up to 3 carbon atoms,

with the proviso that the compound contains at least one alkyl radical.

7. A method for reducing the cardiac activity of a patient which comprises administering to such a patient a cardioactive effect amount of a compound according to claim 1.

4,353,896

PENETRATING TOPICAL MEDICAMENT

Michael A. Levy, 9911 Campbell, Kansas City, Mo. 64131

Filed Jun. 8, 1981, Ser. No. 271,427
Int. Cl.³ A61K 11/56, 31/60, 31/605, 35/78
U.S. Cl. 424—195 10 Claims

1. A penetrating topical medicament, comprising:

from about 0.5 to 5% by volume of a member selected from the group consisting of the corticosteroids, derivatives of the corticosteroids, and mixtures thereof;

from about 10 to 35% by volume of a substance selected from the group consisting of methyl salicylate, triethanolamine salicylate, salicyamide, oil of eucalyptus menthol and mixtures thereof; and

from about 5 to 50% by volume of a medium for transporting said at least said member through the skin to a subcutaneous site.

4,353,897
PESTICIDAL COMPOSITIONS

Klaus-Detlef Bock, Kelsterbach, Fed. Rep. of Germany, and Horst Baum, Nairobi, Kenya, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 181,982

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934978

Int. Cl.³ A01N *57/00, 57/26*

U.S. Cl. 424—200 **9 Claims**

1. An insecticidal composition, containing as active ingredient, insecticidally effective amounts of (I) 1-Phenyl-3-(O,O-diethylthionophosphoryl)-1,2,4-triazole and (II) O,O-diethyl-O-3,5,6-trichloro-2-pyridyl-phosphorothioate wherein the proportion by weight of component (I) to component (II) is in the range of from 1:10 to 10:1.

4,353,898
11α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt, and Barry A. Coomber, Pinner, all of England, assignors to Glaxo Group Limited, London, England

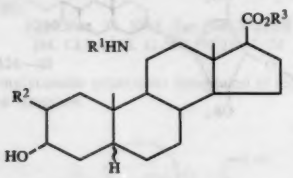
Filed Jul. 15, 1981, Ser. No. 283,454

Claims priority, application United Kingdom, Jul. 16, 1980, 8023295; Dec. 9, 1980, 8039383; Mar. 2, 1981, 8106487; May 29, 1981, 8116413

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—238 **13 Claims**

1. Compounds of the formula:



(I)

wherein:

R^1 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group;

R^2 is a hydrogen atom, a C_{1-6} alkoxy group or a C_{2-5} alkanoyloxy group; and

R^3 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group;

provided that when the compounds contain a 5β-hydrogen atom, R^2 is a hydrogen atom, and the D-homo analogues thereof having the group $—CO_2R^3$ (wherein R^3 is as defined above) at the 17aβ-position, and acid addition salts thereof.

13. A method of treatment or prophylaxis of a human or animal subject suffering from or liable to ventricular dysrhythmias which comprises administering to said subject an effective amount of one or more compounds as claimed in claim 1.

4,353,899
NOVEL 16α-METHYL-PREGNANE

Jean G. Teutsch, Pantin, and Roger Deraedt, Pavillons-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 170,627, Jul. 21, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 300,252

Claims priority, application France, Jul. 26, 1979, 79 19296

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 **4 Claims**

1. 9α,11β-dichloro-16α-methyl-21-oxycarbonyldicyclohexylmethoxy-$\Delta^{1,4}$-pregnadiene-3,20-dione.

4. A method of treating asthma in warm blooded animals comprising applying "in loco" to warm blooded animals an anti inflammatorily effective amount of the compound of claim 1.

4,353,900
9-(ARYLALKYL OR AROYLALKYL)-1-OXA-4,9-DIAZASPIRO(5.5)UNDECAN-3-ONES

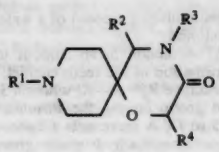
Robin D. Clark, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 19, 1981, Ser. No. 312,448

Int. Cl.³ C07D *498/10*; A61K *31/535*

U.S. Cl. 424—248.54 **21 Claims**

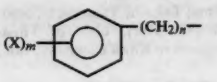
1. A compound of the formula



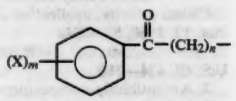
(I)

wherein:

R^1 is



or



wherein X is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo, carboxamido or hydroxy; m is 1, 2 or 3; and n is 1, 2 or 3;

R^2, R^3 and R^4 are independently hydrogen or lower alkyl of one to four carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

4,353,901
9-(1,4-BENZODIOXAN-2-YLALKYL AND HYDROXYALKYL)-1-OXA-4,9-DIAZASPIRO[5.5]UNDECAN-3-ONES

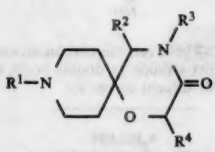
Robin D. Clark, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 19, 1981, Ser. No. 312,447

Int. Cl.³ C07D *498/10*; A61K *31/535*

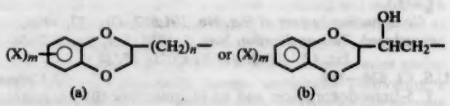
U.S. Cl. 424—248.57 **15 Claims**

1. A compound of the formula:



(I)

wherein: R^1 is



(a) (b)

R^2, R^3, and R^4 are independently hydrogen or lower alkyl of one to four carbon atoms;

X is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms or halo;
m is 1 or 2; and
n is 1, 2 or 3; and
and the pharmaceutically acceptable acid addition salts thereof.

4,353,902
LIVESTOCK FEED AND METHOD FOR IMPROVING FOOD UTILIZATION

Richard D. Hedde, West Chester, and Roger C. Parish, King of Prussia, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Sep. 22, 1980, Ser. No. 189,540
Int. Cl.[3] A23K *1/16*
U.S. Cl. 424—250 17 Claims

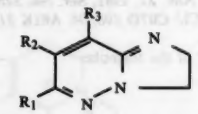
1. The method of improving food utilization to increase growth rate or feed efficiency in meat producing monogastric and ruminant animals comprising administering orally or parenterally to said animals an effective therefor but not toxic quantity of a chemical compound having histamine H_2 receptor antagonist activity.

4,353,903
2,3-DIHYDRO-IMIDAZO[1,2-b]PYRIDAZINE DERIVATIVES, THEIR PREPARATION AND USE IN TREATMENT OF DEPRESSION

Paul Fabiani, Neuilly; Francis Rose, Paris; Abkar Vartanian, Amilly, and Christian Warolin, Paris, all of France, assignors to Synthelabo, Paris, France

Filed Jan. 15, 1981, Ser. No. 225,265
Claims priority, application France, Jan. 16, 1980, 80 0092[illegible]
Int. Cl.[3] C07D *487/04;* A61K *31/50*
U.S. Cl. 424—250 9 Claims

1. A compound of the formula:



in which R_1 represents a phenyl, halogenophenyl, trifluoromethylphenyl, (C_{1-4})-alkylphenyl, (C_{1-4})-alkoxyphenyl, hydroxyphenyl, nitrophenyl, aminophenyl, (C_{1-4})-alkylaminophenyl, di-(C_{1-4})-alkylaminophenyl, acetamidophenyl, thienyl, pyridyl, furyl or nitrofuryl radical, R_2 represents a hydrogen atom or a (C_{1-4})-alkyl radical, and R_3 represents a hydrogen atom or a (C_{1-4})-alkyl, phenyl, halogenophenyl, trifluoromethylphenyl, (C_{1-4})-alkylphenyl, (C_{1-4})-alkoxyphenyl, hydroxyphenyl, nitrophenyl, aminophenyl, (C_{1-4})-alkylaminophenyl, di-(C_{1-4})-alkyl-aminophenyl or acetamidophenyl radical, and its addition salts with pharmaceutically acceptable acids.

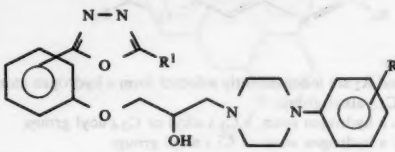
8. A pharmaceutical composition for the treatment of depression comprising an anti-depression effective amount of a compound as claimed in claim 1 in association with a pharmaceutical carrier.

4,353,904
PHENYLPIPERAZINE DERIVATIVES OF 1,3,4-OXADIAZOLYLPHENOLS, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Peter C. Thieme; Albrecht Franke, both of Wachenheim; Dieter Lenke, Ludwigshafen; Hans D. Lehmann, Hirschberg-Leutershausen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,370
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005287
Int. Cl.[3] C07D *413/12;* A61K *31/495*
U.S. Cl. 424—250 6 Claims

1. A compound of the formula I



I

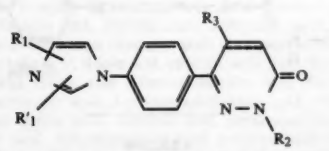
where R^1 is hydrogen or lower alkyl of 1 to 4 carbon atoms and R^2 is hydrogen, halogen, lower alkyl of 1 to 4 carbon atoms or lower alkoxy of 1 to 3 carbon atoms, and where the phenyl ring may contain one or two substituents R^2, and its physiologically tolerated addition salts with acids, the 1,3,4-oxadiazol-2-yl radical being in the o- or m- position to the ether group.

4,353,905
SUBSTITUTED 4,5-DIHYDRO-6-[4-(1H-IMIDAZOL-1-YL)PHENYL]-3(2H)-PYRIDAZINONES AND 6-[4-(1H-IMIDAZOL-1-YL)PHENYL]-3(2H)-PYRIDAZINONES

Ila Sircar, and James A. Bristol, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 17, 1981, Ser. No. 302,181
Int. Cl.[3] C07D *403/10;* A61K *31/50*
U.S. Cl. 424—250 6 Claims

1. A compound having the structural formula:



wherein ---- represents a double or single bond between two carbon atoms; R_1 and R_1' are independently hydrogen, lower alkyl, $CH_2C_6H_5$ or C_6H_5; R_2 is hydrogen, lower alkyl or 2-hydroxyethyl; and R_3 is hydrogen or lower alkyl wherein lower alkyl has one to six carbon atoms; and the pharmaceutically acceptable salts thereof.

4,353,906
CHROMANOL DERIVATIVES AND THEIR USE FOR TREATING HYPERTENSION

Graham A. Showell, Harlow, England, assignor to Beecham Group Limited, England

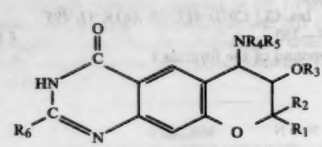
Filed Feb. 2, 1981, Ser. No. 230,540

Claims priority, application United Kingdom, Feb. 2, 1980, 8003594

Int. Cl.³ A61K *31/505;* C07D *487/04*

U.S. Cl. 424—251 **8 Claims**

1. A compound of the formula (I):



(I)

wherein:

R_1 and R_2 are independently selected form a hydrogen atom and a C_{1-3} alkyl group;

R_3 is a hydrogen atom, a C_{1-3} alkyl or C_{2-4} acyl group;

R_4 is a hydrogen atom or C_{1-5} alkyl group;

R_5 is a C_{1-5} alkyl group, a straight chain C_{1-3} alkyl group terminally substituted by a chlorine atom; or

R_4 and R_5 are joined so that together with the nitrogen atom to which they are attached they form pyrrolidino or piperidino; and

R_6 is a C_{1-5} alkyl group;

the NR_4R_5 and OR_3 moieties are trans; and pharmaceutically acceptable salts thereof.

7. An anti-hypertensive pharmaceutical compositions comprising an anti-hypertensive effective amount of the compound according to claim 1, 2, 3, 4, or 6, and a pharmaceutically acceptable carrier.

8. A method of treatment or prophylaxis of hypertension in mammals, which comprises administering to the sufferer an anti-hypertensive effective amount of the compound according to claim 1, 2, 3, 4, or 6.

4,353,907
AMIDINO HYDRAZONE . $C_{17}H_{29-35}COOH$ INSECT AND FIRE ANT BAIT FORMULATIONS

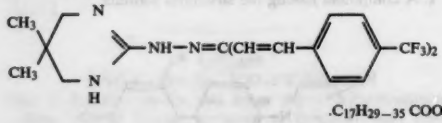
James B. Lovell, Pennington, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 125,592, Feb. 28, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 293,581

Int. Cl.³ C07D *239/18;* A01N *9/22*

U.S. Cl. 424—251 **16 Claims**

1. Compounds of the formula:



$\cdot C_{17}H_{29-35}COOH$

4,353,908
SELECTED 2-TRICHLOROMETHYL-4-PYRIMIDINYL CARBONATES AND THEIR USE AS FUNGICIDES

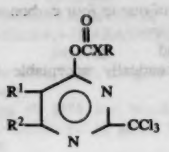
Lawrence E. Katz, Orange, and Walter A. Gay, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1981, Ser. No. 321,033

Int. Cl.³ A01N *43/54;* C07D *239/36*

U.S. Cl. 424—251 **26 Claims**

1. A compound having the formula:



wherein X is an atom selected from the group consisting of oxygen and sulfur; R is a lower alkyl group having 1 to 4 carbon atoms or a phenyl group; R^1 is hydrogen or halo; and R^2 is a lower alkyl group having 1 to 4 carbon atoms.

4,353,909
6-HYDROXY-2-PHENYL-IMIDAZO[4,5-B]PYRIDINES AND SALTS THEREOF

Willi Diederen; Axel Prox; Albert Reuter; Willy Roth, all of Biberach, and Jochen Schmid, Warthausen, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

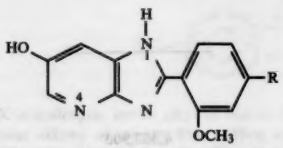
Filed Sep. 24, 1981, Ser. No. 305,159

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1980, 3037464

Int. Cl.³ A61K *31/44;* C07D *487/04*

U.S. Cl. 424—256 **5 Claims**

1. A compound of the formula



wherein R is methylsulfinyl or methylsulfonyl, its 3H-tautomer, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,353,910
DERIVATIVES OF 4,5,6,7-TETRAHYDROISOXAZOLO [5,4-C] PYRIDINE-3-ONE, PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

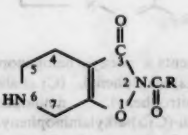
Jens K. Perregaard, Oelstykke, Denmark, assignor to Kefalas A/S, Copenhagen-Valby, Denmark

Filed Nov. 27, 1981, Ser. No. 325,292

Int. Cl.³ C07D *498/04;* A61K *31/44*

U.S. Cl. 424—256 **8 Claims**

1. A compound of the formula:



I

wherein R is an alkyl group, branched or unbranched, having from one to seventeen crabon atoms inclusive, a phenyl group optionally substituted with one or two groups selected from lower alkyl, lower alkyloxy and halogen, a phenylalkyl group, a lower alkyloxy group or a $—NHR^1$ group, wherein R^1 is hydrogen, lower alkyl, phenyl or cyclohexyl, as well as pharmaceutically acceptable acid addition salts thereof.

2. A pharmaceutical composition suitable for the alleviation of GABA-system-malfunction-related disorders containing as an active ingredient a compound of formula I as defined in claim 1, or a pharmaceutically acceptable acid addition salt thereof together with a pharmaceutical carrier or excipient.

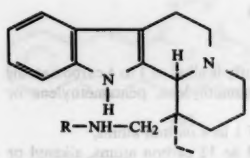
4,353,911

INDOLO(2,3-A)QUINOLIZIDINES, USEFUL IN INCREASING FEMORAL AND VERTEBRAL BLOOD FLOW

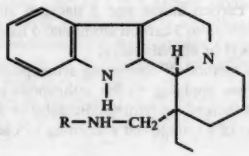
Andre Buzas, 25, Route de Versailles, 91570 Bievres, France

PCT No. PCT/FR78/00043, § 371 Date Jul. 25, 1979, § 102(e) Date Jul. 20, 1979, PCT Pub. No. WO79/00319, PCT Pub. Date Jun. 14, 1979
PCT Filed Nov. 24, 1978, Ser. No. 129,974
Int. Cl.[3] A61K *31/475*; C07D *401/02*
U.S. Cl. 424—258 2 Claims

1. A method of increasing femoral blood flow and vertebral blood flow without significantly affecting arterial blood pressure and inducing only a slight increase in cardiac rhythm comprising the administration of 5 mg to 40 mgs of a compound according to the formulae (I) and (II)



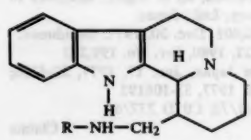
(I)



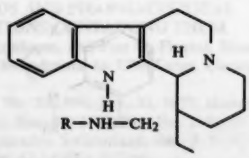
(II)

wherein R is alkoxy carbonyl, the alkoxy having up to 5 carbon atoms, trimethoxy substituted phenyl carbonyl or a therapeutically acceptable acid addition salt of one of the foregoing.

2. A therapeutic composition comprising in a therapeutically acceptable carrier, a therapeutically effective amount for increasing femoral blood flow and vertebral blood flow without significantly affecting arterial blood pressure and inducing only a slight increase in cardiac rhythm of a compound of the formulae (I) and (II)



(I)



(II)

wherein R is an alkoxy carbonyl, the alkoxy having up to 5 carbon atoms, trimethoxy substituted phenyl carbonyl or a therapeutically acceptable acid addition salt of one of the foregoing.

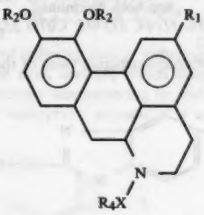
4,353,912

N-HALOALKYL NOR APOMORPHINES AND METHOD OF INACTIVATING DOPAMINE RECEPTOR SITES AND ENHANCING DOPAMINERGIC ACTIVITY THEREWITH

John L. Neumeyer, Wayland, Mass., assignor to Northeastern University, Boston, Mass.

Filed May 8, 1980, Ser. No. 147,737
Int. Cl.[3] A61K *31/47*; C07D *221/18*
U.S. Cl. 424—258 4 Claims

1. A method of inactivating dopamine receptor sites and enhancing dopaminergic activity by administering a therapeutically effective amount of a compound of the formula



wherein R_1 is R_2O; R_2 is hydrogen, C_1 to C_6 alkyl or

where R_3 and R_4 are C_1 to C_6 alkyl and X is halogen and the acid addition salts thereof selected from the group formic acid, acetic acid, isobutyric acid, alpha-mercaptopropionic acid, malic acid, fumaric acid, succinic acid, succinamic acid, tartaric acid, citric acid, lactic acid, benzoic acid, 4-methoxybenzoic acid, phthalic acid, anthranilic acid, 1-naphthalenecarboxylic acid, cinnamic acid, cyclohexanecarboxylic acid, mandelic acid, tropic acid, crotonic acid, acetylene dicarboxylic acid, sorbic acid, 2-furancarboxylic acid, cholic acid, pyrenecarboxylic acid, 2-pyridinecarboxylic acid, 3-indoleacetic acid, quinic acid, sulfamic acid, methanesulfonic acid, isothionic acid, benezenesulfinic acid, p-toluenesulfonic acid, benzenesulfinic acid, butylarsonic acid, diethylphosphinic acid, p-aminophenylarsinic acid, phenylstibnic acid, phenylphosphinous acid, methylphosphinic acid, phenylphosphinic acid, hydrofluoric acid, hydrochloric acid, hydrobromic acid, hydroidic acid, perchloric acid, nitric acid, sulfuric acid, phosphoric acid, hydrocyanic acid, phosphotungstic acid, molybdic acid, phosphomolybdic acid, pyrophosphoric acid, arsenic acid, picric acid, picrolonic acid barbituric acid and boron trifluoride.

2. The compound (−)N-(2-chloroethyl)norapomorphine and the acid addition salts thereof selected from the group formic acid, acetic acid, isobutyric acid, alpha-mercaptopropionic acid, malic acid, fumaric acid, succinic acid, succinamic acid, tartaric acid, citric acid, lactic acid, benzoic acid, 4-methoxybenzoic acid, phthalic acid, anthranilic acid, 1-naphthalenecarboxylic acid, cinnamic acid, cyclohexanecarboxylic acid, mandelic acid, tropic acid, crotonic acid, acetylene dicarboxylic acid, sorbic acid, 2-furancarboxylic acid, cholic acid, pyrenecarboxylic acid, 2-pyridinecarboxylic acid, 3-indoleacetic acid, quinic acid, sulfamic acid, methanesulfonic acid, isethionic acid, benzenesulfinic acid, p-toluenesulfonic acid, benzesulfinic acid, butylarsonic acid, diethylphosphinic acid, p-aminophenylarsinic acid, phenylstibnic acid, phenylphosphinous acid, methylphosphonic acid, phenylphosphinic acid, hydrofluoric acid, hydrochloric acid, hydrobromic acid, hydriodic acid, perchloric acid, nitric acid, sulfuric acid, phosphoric acid, hydrocyanic acid, phosphotungstic acid, molybdic acid, phosphomolybdic acid, pyrophosphoric acid, arsenic acid, picric acid, picrolonic acid, barbituric acid and boron trifluoride.

4,353,913
BENZIMIDAZOLYLCARBAMIC ACID ESTER COMPOUNDS, THEIR PRODUCTION, AND THEIR MEDICINAL USE

Hartmund Wollweber, Wuppertal; Heinrich Kölling, Haan; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 83,883, Oct. 11, 1979, Pat. No. 4,287,199. This application Jan. 12, 1981, Ser. No. 224,584

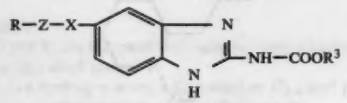
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845537

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ A61K *31/44, 31/445;* **C07D** *235/32, 401/02*

U.S. Cl. 424—263 **10 Claims**

1. A 2-benzimidazolylcarbamic ester of the formula



(I)

or a salt thereof in which

X denotes a sulphur atom, an oxygen atom, an SO group or an SO_2 group,

Z denotes an alkylene group with 1 to 6 carbon atoms in the main chain, which can optionally be substituted by C_1 to C_4 alkyl,

R denotes a cycloalkyleneimino, cycloalkenylimino or cycloalkadienyleneimino group which has a total of 4 to 7 ring members and/optionally substituted by one or two C_1 to C_4 alkyl groups, and

R^3 denotes a C_1 to C_4 alkyl group which is unsubstituted or substituted by C_1–C_4 alkoxy, halogen, trifluoromethyl, cyano or nitro or a C_2 to C_6 alkenyl group.

4,353,914
ANTITUSSIVE ANILIDES

Juhani O. W. Kaila; Erkki J. Honkanen; Joachim E. Alberty, and Jaakko J. Hukki, all of Helsinki, Finland, assignors to Orion-yhtyma Oy, Finland

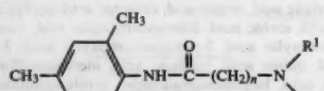
Division of Ser. No. 7,170, Jan. 29, 1979, abandoned. This application Jan. 11, 1980, Ser. No. 111,508

Claims priority, application Finland, Feb. 7, 1978, 780387

Int. Cl.³ A61K *31/165, 31/445*

U.S. Cl. 424—267 **2 Claims**

1. A process for relieving coughing comprising administering to a subject an effective amount of a compound having the general formula



wherein n is an integer from 2 to 3, and R^1 and R^2 each separately represent a lower alkyl group having 1 to 3 carbon atoms, or they form together with the nitrogen atom to which they are attached a piperidine ring which is substituted by a methyl group, and non-toxic acid addition salts thereof.

4,353,915
COMBATING PESTS WITH 2-(AZOL-1-YL)-ALDOXIME-CARBAMATES

Jörg Stetter, Wuppertal; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

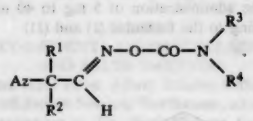
Filed Jan. 12, 1978, Ser. No. 869,067

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704682; Jul. 28, 1977, 2734107

Int. Cl.³ A01N *47/24;* **C07D** *231/12, 233/61, 249/08*

U.S. Cl. 424—269 **9 Claims**

1. A carbamate of the formula



wherein

R^1 and R^2 each independently is alkyl of 1 to 4 carbon atoms or together form a tetramethylene, pentamethylene or hexamethylene bridge,

R^3 is hydrogen or alkyl of 1 to 4 carbon atoms,

R^4 is hydrogen, alkyl of 1 to 12 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and 5 halogen atoms, halogenoalkenyl with up to 3 carbon atoms and 5 halogen atoms, or alkoxyalkyl or alkylthioalkyl

8. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,353,916
BENZOTHIAZOL-2-ONES AND PHYTOPATHOGENIC FUNGICIDAL USE THEREOF

Tamon Uematsu, Toyonaka; Satoru Inoue, Nishinomiya, and Norihisa Yamashita, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Japan

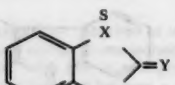
Continuation of Ser. No. 866,401, Dec. 30, 1977, abandoned. This application Oct. 21, 1980, Ser. No. 199,222

Claims priority, application Japan, Jan. 17, 1977, 52-4296; Apr. 5, 1977, 52-39308; Sep. 2, 1977, 52-106192

Int. Cl.³ A01N *43/78;* **C07D** *277/68*

U.S. Cl. 424—270 **7 Claims**

1. A compound of the formula:



wherein R_1 is a halogen atom or methyl group, R_2 is a methyl or ethyl group and X is a sulfur atom and Y is an oxygen atom.

5. A method for controlling *phytopathogenic fungi* which comprises applying an effective amount *against phytopathogenic fungi* of the compound according to claim 1 to the fungi.

4,353,917

AMINO DERIVATIVES OF 2-METHYL-5-(2-HYDROXYSTYRYL)-1,3,4-THIADIAZOLE, THEIR PREPARATION, AND FORMULATIONS CONTAINING THESE COMPOUNDS

Fritz-Frieder Frickel, Deidesheim; Peter C. Thieme; Albrecht Franke, both of Wachenheim; Helmut Hagen, Frankenthal; Dieter Lenke, Ludwigshafen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,834

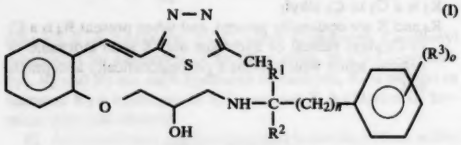
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943406

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.³ A61K *31/41, 31/425;* C07D *285/12*

U.S. Cl. 424—270 4 Claims

1. A compound of the general formula (I)



(I)

were n is 1 or 2, o is 1, 2 or 3, R^1 and R^2 are hydrogen or straight-chain or branched alkyl of 1 to 5 carbon atoms, R^3 is hydrogen, halogen, hydroxyl, alkyl, alkoxy or alkylthio of 1 to 5 carbon atoms (the last-mentioned three groups each being unsubstituted, or mono-, di- or tri-substituted by halogen, or mono-substituted by hydroxyl or alkoxy of 1 to 3 carbon atoms), alkenyl, alkynyl or alkynyloxy, each of 2 to 6 carbon atoms and cycloalkoxy of 3 to 8 carbon atoms, benzyloxy or amino which is unsubstituted or is mono- or di-substituted by alkyl of 1 to 5 carbon atoms, and if o is 2 or 3, the R^3's may be identical or different, or R^3 is methylenedioxy or alkylene of 3 or 4 carbon atoms, and its addition salts with acids.

4. A therapeutic agent for treating angina pectorus, hypertonia and cardiac arrhythmias which comprises: a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of a compound of the formula I of claim 1, or a physiologically tolerated acid addition salt thereof.

4,353,918

DEXTROROTATORY BICYCLIC THIADIAZA COMPOUNDS AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Richard Göschke, Bottmingen, and Pier G. Ferrini, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 108,904, Dec. 31, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,195

Claims priority, application Switzerland, Jan. 5, 1979, 87/79

Int. Cl.³ C07D *277/60*

U.S. Cl. 424—270 10 Claims

1. The dextrorotatory enantiomer of trans-5,6-di-p-methoxyphenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,353,919

ANALGESIC AND ANTIPYRETIC PHARMACEUTICAL COMPOSITIONS CONTAINING A BENZOTHIAZOL-2(3H)-ONE

Wolfhard Engel, Biberach; Günter Trummlitz, Warthausen; Wolfgang Eberlein, Biberach; Günther Schmidt, Biberach; Günther Engelhardt, Biberach, and Rainer Zimmermann, Mittelbiberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

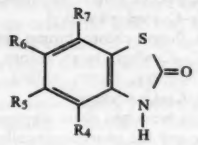
Continuation-in-part of Ser. No. 163,964, Jun. 30, 1980, abandoned. This application Apr. 15, 1981, Ser. No. 254,539

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016816; May 10, 1980, 3017977

Int. Cl.³ A61K *31/425*

U.S. Cl. 424—270 4 Claims

1. The method of relieving pain or reducing fever in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective analgesic or antipyretic amount of a compound of the formula



wherein

R_5 is methyl or methoxy, and R_4, R_6 and R_7 are hydrogen; or

R_6 is fluorine or chlorine, and R_4, R_5 and R_7 are hydrogen; or

R_7 is chlorine, and R_4, R_5 and R_6 are hydrogen; or

R_5 and R_6 are methoxy, and R_4 and R_7 are hydrogen; or

R_4 is methyl or chlorine, and R_5, R_6 and R_7 are hydrogen.

4,353,920

USE OF SELECTED 3-TRIHALOMETHYL-5-UREIDO-1,2,4-OXADIAZOLES AND -1,2,4-THIADIAZOLES AS AGRICULTURAL VIRICIDES

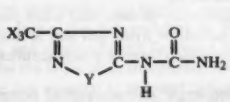
Walter A. Gay, Cheshire, and Elizabeth A. Twohig, Seymore, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 181,039, Aug. 25, 1980. This application Dec. 24, 1981, Ser. No. 334,483

Int. Cl.³ A01N *47/36;* C07D *271/06, 285/08*

U.S. Cl. 424—270 5 Claims

1. The method of controlling agricultural viruses which comprises contacting said viruses with a viricidally effective amount of a compound of the formula:



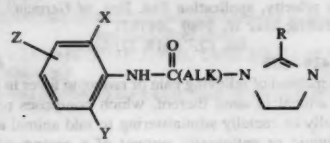
wherein X is either Cl or F and Y is either S or O.

4,353,921
ANTIARRYTHMIC 1-ARYLCARBAMOYLALKYL-2-IMIDAZOLINE DERIVATIVES, COMPOSITION AND METHOD OF USE

Julius Diamond, Mountain Lakes; Thomas K. Morgan, Jr., and Ronald A. Wohl, both of Morris Plains, all of N.J., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Filed Jun. 19, 1981, Ser. No. 275,172
Int. Cl.³ A61K *31/415;* C07D *233/81, 233/06, 233/20*
U.S. Cl. 424—273 R 14 Claims

1. A compound having the formula:



wherein

R=C_1–C_8 alkyl, phenyl, benzyl, substituted phenyl, C_3–C_7 cycloalkyl, C_4–C_8 cycloalkylalkyl

X=C_1–C_4 alkyl, fluoro, chloro, bromo, trifluoromethyl;

Y=hydrogen, C_1–C_4 alkyl, fluoro, chloro, bromo;

Z=hydrogen, hydroxy, fluoro, chloro, bromo, methyl, C_1–C_4 alkoxy, C_1–C_4 acyloxy;

ALK=straight or branched chain alkylene having up to 8 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

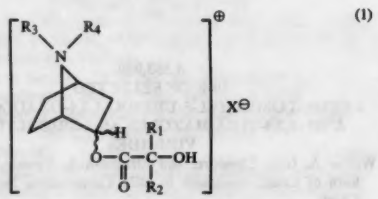
13. The method for the suppression of cardiac arrythmia in an animal which comprises administering to said animal an amount effective for the suppression of said arrythmia of a compound according to claim 1.

4,353,922
ANTICHOLINERGIC BRONCHODILATORS

Jurg R. Pfister, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 13, 1981, Ser. No. 243,674
Int. Cl.³ C07D *487/08;* A61K *31/40*
U.S. Cl. 424—274 13 Claims

1. A compound having the general formula



(I)

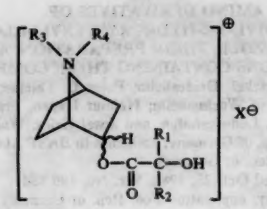
wherein the serrated lines denote both endo and exo forms;

R_1 and R_2 are the same or different and are C_1 to C_6 alkyl, C_5 or C_6 cycloalkyl, C_5 or C_6 cycloalkenyl, phenyl optionally substituted with C_1 to C_6 alkyl, C_1 to C_6 alkoxy or halo, or 5 or 6 membered heterocyclic aryl wherein the heteroatom is oxygen, nitrogen or sulfur;

R_3 is a C_1 to C_6 alkyl;

R_4 and X are optionally present, and when present R_4 is a C_1 to C_6 alkyl radical or hydrogen and X is an inorganic or organic anion which forms a pharmaceutically acceptable salt.

12. An anticholinergic pharmaceutical composition which comprises a pharmaceutically acceptable carrier and a compound represented by the formula



(I)

wherein the serrated lines denote both endo and exo forms;

R_1 and R_2 are the same or different and are C_1 to C_6 alkyl, C_5 or C_6 cycloalkyl, C_5 or C_6 cycloalkenyl, phenyl optionally substituted with C_1 to C_6 alkyl, C_1 to C_6 alkoxy or halo, or 5 or 6 membered heterocyclic aryl wherein the heteroatom is oxygen, nitrogen or sulfur;

R_3 is a C_1 to C_6 alkyl;

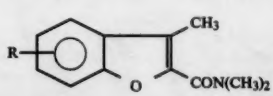
R_4 and X are optionally present, and when present R_4 is a C_1 to C_6 alkyl radical or hydrogen and X is an inorganic or organic anion which forms a pharmaceutically acceptable salt.

4,353,923
PHARMACEUTICAL COMPOSITION CONTAINING A BENZOFURANCARBOXAMIDE DERIVATIVE AS THE ACTIVE INGREDIENT

Hiroshi Takizawa; Yoshimasa Oiji, and Tatsuyuki Hirayama, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,377
Claims priority, application Japan, Aug. 1, 1980, 55/105138
Int. Cl.³ A61K *31/34*
U.S. Cl. 424—285 12 Claims

1. A muscle-relaxing, anti-inflammatory or analgesic composition which comprises at least one pharmaceutically acceptable carrier and an effective amount of a benzo[b]furancarboxamide compound represented by the general formula:



(I)

wherein R represents a halogen atom, an alykyl group having 1–5 carbon atoms or an alkoxy group having 1–5 carbon atoms to provide therapeutic activity to said composition.

4,353,924
ANIMAL FEED SUPPLEMENT HAVING REDUCED CORROSION CHARACTERISTICS

Joseph W. Baker, St. Louis, Mo.; Dennis L. Mansfield, Nitro, W. Va., and David J. Weinkauff, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 4, 1979, Ser. No. 72,541
Int. Cl.³ A61K *31/19*
U.S. Cl. 424—317 5 Claims

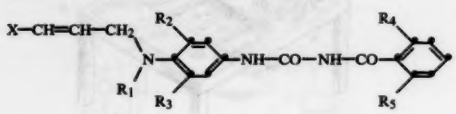
1. An animal feed supplement having reduced metal corrosion characteristics comprising an aqueous solution containing 87–90 percent by weight 2-hydroxy-4-(methylthio)-butanoic acid, said solution having a pH of 0.9–1.2.

4,353,925
INSECTICIDAL N-[4-(3'-HALOPROP-2'-EN-1'-YL)-AMINOPHENYL]-N'-BENZOYLUREAS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,546
Claims priority, application Switzerland, Jul. 16, 1980, 5457/80; Aug. 12, 1980, 6095/80; Feb. 26, 1981, 1294/81; Jun. 3, 1981, 3628/81
Int. Cl.³ A01N 47/34; C07C 127/22
U.S. Cl. 424—322 14 Claims

1. A compound of the formula



wherein R_1 is hydrogen, C_1–C_4-alkyl, C_3-alkenyl, C_3-alkenyl substituted by a chlorine or bromine atom, or C_3–C_6-cycloalkyl, R_2 and R_3 are each hydrogen or halogen, R_4 is methyl or halogen, R_5 is hydrogen or halogen, and X is chlorine or bromine; and salts thereof.

12. An insecticidal composition which contains (1) as active ingredient an insecticidally effective amount of a compound according to claim 1 and (2) a suitable carrier.

13. A method for combatting insects which comprises applying to said insects or to a locus desired to be protected from said insects an insecticidally effective amount of a compound according to claim 1.

4,353,926
SODA CRACKERS

Takashi F. Sugihara, Pinole, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 29, 1979, Ser. No. 98,460
Int. Cl.³ A21D 8/04
U.S. Cl. 426—20 13 Claims

1. A method for rapid, controlled preparation of soda cracker dough, which comprises the steps of

(a) preparing a liquid starter by a process comprising forming a slurry containing flour and water in the proportion of about 3–5 parts of water per part of flour, inoculating the slurry with viable cells of *Lactobacillus plantarum* in a concentration such that the liquid starter can be developed in about 6–8 hours, and developing the inoculated slurry by holding it with agitation at a temperature of about 25°–35° C. to cause proliferation of the added microorganisms,

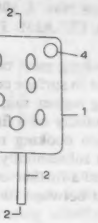
(b) preparing a liquid sponge by a process comprising mixing the liquid starter with flour, shortening, and yeast, and fermenting the liquid sponge, and

(c) mixing a portion of the so-prepared and so-fermented liquid sponge with flour to form a soda cracker dough, the amount of liquid starter mixed with flour in step b being sufficient to reduce the fermentation time of the sponge and the amount of liquid sponge mixed with flour to form a soda cracker dough in step c being sufficient to reduce the fermentation time of the dough such that step b and c above are carried out in approximately eight hours or less.

4,353,927
FROZEN DESSERT PRODUCT

Susan L. Lovercheck, 210 Castle Dr., #33, Bethel Park, Pa. 15102

Filed May 18, 1981, Ser. No. 264,346
Int. Cl.³ A23G 9/00, 9/24, 9/26
U.S. Cl. 426—101 7 Claims

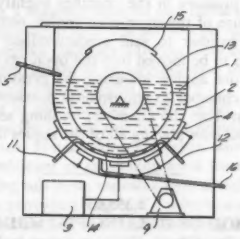


1. A frozen dessert product comprising a matrix of frozen dessert and at least one inner bit dispersed therein, wherein said dessert matrix is ice cream, ice milk, fruit sherbet, french ice cream, custard, french custard ice cream or mellorine, each of said inner bits having a solid center, a readily water-soluble solid confectionary coating enclosing said center and a substantially water insoluble coating substantially enclosing said confectionary coating whereby dissolution of said confectionary coating into said dessert matrix is suppressed by the substantially water insoluble coating so that when consumed, the solid confectionary coating dissolves in the mouth of the consumer, thereby providing enhanced flavor.

4,353,928
METHOD OF AND AN APPARATUS FOR TREATING FISH MATERIAL TO MAKE THE SAME READY FOR CONSUMPTION

Ewald Seliger; Klaus Dudar, both of Halle an der Saale; Günter Stöhr, Plauen; Rudolf Millner, and Wilhelm Banse, both of Halle an der Saale, all of German Democratic Rep., assignors to Veb Rationalisierung Halle, Halle, German Democratic Rep.

Filed Nov. 25, 1977, Ser. No. 854,747
Int. Cl.³ A23L 3/30, 1/325
U.S. Cl. 426—238 13 Claims



1. A method of treating fish material to make the same ready for consumption, comprising the steps of preparing a flavoring bath; accommodating the fish material to be treated in the flavoring bath; and subjecting the flavoring bath to ultrasonic sound waves for the latter to be transmitted through the flavoring bath to the fish material to enhance the penetration of the flavoring bath into the fish material and also to tenderize the latter.

4,353,929

RADIATION AND ELECTRIC CURRENT COOKING OF MEAT

David B. Flavan, Jr.; Merrill M. E. Jenkins, Sr., both of St. Louis; James S. White, Webster Groves, and James E. Pate, Fenton, all of Mo., assignors to Three Rivers Development Corporation, St. Charles, Mo.

Division of Ser. No. 42,747, May 29, 1979, Pat. No. 4,244,284. This application Nov. 3, 1980, Ser. No. 203,082

Int. Cl.[3] A23L *3/00, 3/32*

U.S. Cl. 426—243 5 Claims

1. A method of cooking meat comprising the steps of:

subjecting said meat to surface cooking by radiation in a first radiation cooking region, said surface cooking being concentrated substantially on a first side only of said meat in said first radiation cooking region leaving the opposite side of said meat substantially, unradiated;

moving said meat to a further cooking region;

clamping said meat between two electrodes in said further cooking region;

passing electric current through said meat between said electrodes to provide cooking throughout the thickness of said meat;

subjecting said meat to surface cooking by radiation applied substantially on said opposite side in a second radiation cooking region; and

wherein said opposite side radiation step is conducted following said electric current passing step, and wherein said second radiation cooking region is different from said first radiation cooking region and said further cooking region.

4,353,930

CALCIUM CHLORIDE INFILTRATION OF APPLES

Katsuji Hirahara, Santa Clara, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 2, 1981, Ser. No. 279,896

Int. Cl.[3] A23B *7/156;* A23L *1/212*

U.S. Cl. 426—281 4 Claims

1. A method of treating a batch of apples, consisting of open and closed-core apples comprising the steps of positioning the batch of apples in a chamber at atmospheric pressure; sealing the chamber; moving a quantity of $CaCl_2$ solution into the chamber; raising the pressure of the atmosphere in the chamber to a predetermined level to pressurize the $CaCl_2$ solution; maintaining the pressure at said predetermined level for approximately 10 seconds with the apples in the pressurized atmosphere to raise the internal pressure of the open-core apples in the batch in the chamber; immersing all of the apples in the $CaCl_2$ solution to initiate inward movement of the solution toward the center of the closed-core apples in the batch; reducing the pressure in the chamber slightly to reduce the internal pressure of the open-core apples; returning the pressure of the chamber to said predetermined level to cause $CaCl_2$ solution to be moved into the openings at the core end of the open-core apples; lowering the pressure of the atmosphere in the chamber to atmospheric pressure; removing the $CaCl_2$ solution from the chamber; washing and drying all of said apples; and then placing all of the apples in a cold storage environment.

4,353,931

METHOD OF HULLING PISTACHIO NUTS

Joseph Volk, Sr., Gilroy, Calif., assignor to Benjamin Volk, Gilroy, Calif.

Filed Jun. 19, 1981, Ser. No. 275,263

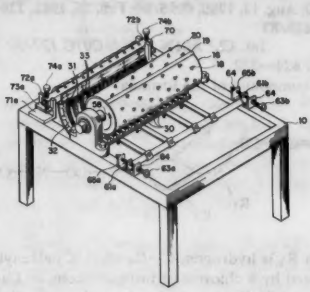
Int. Cl.[3] A23N *5/00*

U.S. Cl. 426—483 3 Claims

1. A method of removing hulls from pistachio nuts said method comprising the steps of

(a) depositing unhulled pistachio nuts between rotating means having projections extending outward from a surface thereof and a means having slots, said projections being spaced apart on said surface and said surface movably mounted on support means with said surface having projections disposed in close proximity to the surface of said means having slots so that the projections extend into the slots, said slots being narrower than the pistachio nuts;

(b) passing said unhulled pistachio nuts between the surface having projections and a surface of said means having slots by means of moving the surface of said means having



projections, so as to push said pistachio nuts in said slots with said projections; and

(c) abrading said hulls from said pistachio nuts by means of the surface having projections and the surface of said means having slots contacting said hulls while said unhulled pistachio nuts pass between said surface having projections and said surface of said means having slots.

4,353,932

REFRIGERATOR POURABLE AND STABLE PANCAKE BATTERS FOR PREPARING STABLE PANCAKES AND METHOD FOR PREPARING

David P. Bone, Palatine, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 11, 1981, Ser. No. 233,364

Int. Cl.[3] A21D *10/04*

U.S. Cl. 426—532 2 Claims

1. A pancake batter capable of retaining microbiological stability at refrigerator temperatures for an extended period of time, said batter including:

a. at least 25% flour;

b. about 35% to about 40% water;

c. about 10% to about 15% oil;

d. sugars comprising saccharides and polyhydric alcohols, said sugars being in ratios to said water of from 0.3/1.0 to 0.6/1.0;

e. said saccharides being from about 6% to about 11.5%;

f. said polyhydric alcohols being from about 2.5% to about 13.5%;

g. a heat-setting protein; and

h. minor but effective amounts of a leavening agent, an antioxidant, salt and flavoring; said batter being mechanically homogenized to provide a stable emulsion having a water phase solute concentration of about 2 to about 5 molal, a water activity of from about 0.88 to about 0.95 and a substantially neutral pH, said batter being capable of forming pancake of good flavor, texture and appearance.

4,353,933
METHOD FOR CONTROLLING ELECTROLESS PLATING BATH

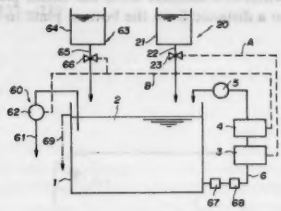
Ken Araki, Ibaragi; Hiromitsu Sakai, Kawanishi, and Yutaka Sugiura, Kobe, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Nov. 4, 1980, Ser. No. 204,046

Claims priority, application Japan, Nov. 14, 1979, 54-147215; Dec. 22, 1979, 54-167333; Dec. 22, 1979, 54-167334

Int. Cl.³ B05D *1/18*

U.S. Cl. 427—8 **5 Claims**



1. A method for controlling the content of an electroless plating bath such that the bath may be used for an extended period of time without remaking, the bath consisting of consumable ingredients including a metal ion and a reducing agent and unconsumable ingredients including a complexing agent, the metal ion being reduced to a metal by the reducing agent, whereby reaction by-products including decomposition products of the reducing agent are produced, the method comprising the steps of:

continuously or intermittently measuring the concentration of at least one consumable ingredient in the electroless plating bath;

automatically adding to the plating bath a first replenishing composition consisting essentially of the consumable ingredients after detecting that the measured value has reached a predetermined concentration in order to maintain the concentration of the consumable ingredients in the bath at the predetermined concentration;

continuously or intermittently measuring at least one of the physical properties of the electroless plating bath including the specific gravity, electrical conductivity and refractive index, to determine the degree of aging of the bath; and

automatically discharging a predetermined volume of the plating solution and automatically adding to the plating bath a second replenishing composition containing the unconsumable ingredients in an amount essentially corresponding to the lost amount discharged after detecting that the measured value of the physical property has reached a predetermined value in order to maintain the amount of the reaction by-products in the bath at a predetermined amount without an increasing accumulation of the by-products.

4,353,934
DIP-COATING METHOD

Atushi Nakashima; Michisuke Edamatu, and Kenji Kushi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

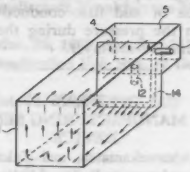
Filed Jun. 26, 1980, Ser. No. 163,360

Claims priority, application Japan, Jul. 9, 1979, 54/86722; Jul. 10, 1979, 54/87232

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—57 **4 Claims**

1. In the dip-coating method for obtaining a coated film on the surface of an article by circulating a coating solution in a tank, dipping the article in the solution and then pulling the article up out of the coating solution, the improvement which comprises irradiating the coating solution with ultrasonic waves, and jetting the coating solution uniformly and parallel to the bottom of the coating solution tank through a jet nozzle at the tank bottom and from the side of the tank on which the coating solution overflows toward the side opposite it at the



bottom of the tank, the ultrasonic waves ranging in frequency from 1 to 100 KHz and in strength from 0.2 to 2 w/cm^2, and the flow velocity of the coating solution within the coating solution tank ranging from 2 to 100 cm/sec.

4,353,935
METHOD OF MANUFACTURING A DEVICE HAVING A CONDUCTOR PATTERN

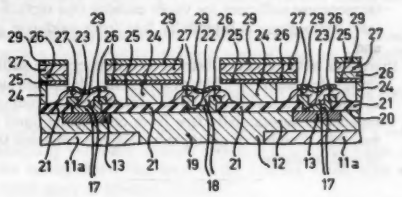
Bohuslav Symersky, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 764,589, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 612,718, Sep. 12, 1975, abandoned. This application Aug. 24, 1978, Ser. No. 936,616

Claims priority, application Netherlands, Sep. 19, 1974, 7412383

Int. Cl.³ H01L *21/285*

U.S. Cl. 427—89 **2 Claims**



1. A method of manufacturing a device comprising a body which has a conductor pattern, comprising the steps of:

(a) providing said body having a surface,

(b) providing a masking layer on said surface, said masking layer comprising at least first and second masking sub-layers of respective materials differing from each other, said first masking sub-layer underlying said second masking sub-layer and being of metal,

(c) providing in said masking layer recesses in the form of said conductive pattern that is to be provided,

(d) etching said first masking sub-layer, using said second masking sub-layer as an etching mask for the underlying first masking sub-layer, exposing part of said body surface,

(e) thereafter providing a layer of conductive material on the exposed said surface and on said masking layer, said conductive layer comprising plural conductive sub-layers of respective materials differing from each other, said step of providing said conductive layer comprising providing a first conductive sub-layer on said surface and then providing a second conductive sub-layer which covers the whole free surface of the underlying said first conductive sub-layer such that said first conductive sub-layer is completely shielded from the environment by said second conductive sublayer, and

(f) then removing said masking layer and a first part of said conductive layer present on said masking layer so that a

second part of said conductive layer present in said recesses of said masking layer remains on said body as said conductive pattern,

wherein said step of providing said conductive layer comprises providing said first and second conductive sub-layers at different respective pressures, the pressure during the provision of said first conductive sub-layer being smaller than the pressure during the provision of said second conductive sub-layer.

4,353,936

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

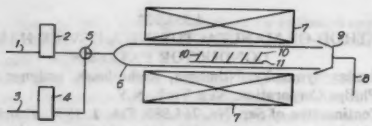
Takao Nozaki, Aizuwakamatsu, and Takashi Ito, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP79/00046, § 371 Date Sep. 5, 1980, § 102(e) Date Sep. 5, 1980

PCT Filed Feb. 27, 1979, Ser. No. 252,974

Int. Cl.³ B05D 5/12; B44C 1/22; H01L 21/306

U.S. Cl. 427—94 **5 Claims**



1. A method of manufacturing a semiconductor device in a reaction chamber, said method comprising the steps of

preparing a silicon substrate having an exposed surface in the reaction chamber;

initially heating the substrate in said reaction chamber to a temperature sufficient for vapor etching said surface in an inert atmosphere substantially free from oxidative gases; and

thereafter heating said substrate to a temperature sufficient for the deposition of a film of silicon nitride on said surface in said reaction chamber in an atmosphere including ammonia and substantially free from other compound gases by direct reaction of nitrogen of said ammonia and silicon of said substrate.

4,353,937

COATING METHOD

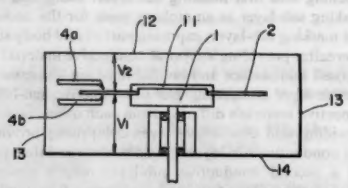
Katsuyoshi Chiba, Hachioji; Teruo Tsunoda, Nanpeidaimachi; Yoshiki Kato, Hinodemachi; Mitsushi Endo, Hadano; Fumihiko Sawase, Hakonemachi; Katuji Itikawa, Numazu, and Masa-aki Imamura, Minami-ashigara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,120

Claims priority, application Japan, Nov. 30, 1979, 54-154379; Jul. 11, 1980, 55-93922; Jul. 21, 1980, 55-98742

Int. Cl.³ B05D 5/12

U.S. Cl. 427—130 **18 Claims**



1. A method of forming magnetic coatings comprising the step of spraying a magnetic coating composition with magnetic powder dispersed therein onto both sides of a horizontally arranged disk substantially simultaneously while the disk is being rotated at a speed of 5 to 700 r.p.m. to distribute said coating composition over whole surfaces of said disk due to the rotation of said disk and to centrifugally throw off excess coating composition, and the step of further rotating said disk at a rotational frequency which is not lower than said speed to adjust thicknesses of the coatings; the rotation of said disk for adjusting thicknesses of the coatings being executed under a state wherein a shield plate is arranged over at least that part of said disk formed with said coating and a bottom plate is arranged under at least that part of said disk formed with said coating, and wherein a distance from the shield plate to the disk is less than a distance from the bottom plate to the disk.

4,353,938

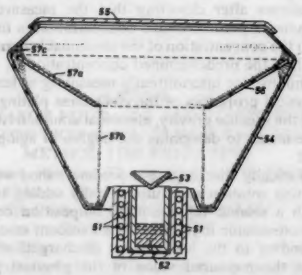
COATING POWDER WITH VALVE-METAL

Henley F. Sterling, Great Dunmow; Eric L. Bush, Matching Green, Nr. Harlow; Miles P. Drake, Harlow; Denis W. J. Hazelden, Bishop's Stortford, and Sarah Y. Hughes, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,574

Int. Cl.³ B05D 7/00

U.S. Cl. 427—214 **17 Claims**



1. A method of coating powder particles with valve metals, comprising the steps of confining the particles to be coated in the interior of a rotatable drum; exposing the particles to an evacuated atmosphere; introducing vapors of at least one valve metal into the evacuated atmosphere, including evaporating the valve metal; presenting the particles to the vapors wherein the particles are coated with a layer of elemental valve metal, including rotating the drum and entraining the particles for joint travel with the rotating drum; and countering the tendency of the coated particles to form agglomerates, including at least occasionally enriching the evacuated atmosphere with oxygen at a controlled rate sufficient for substantially preventing the formation of such agglomerates.

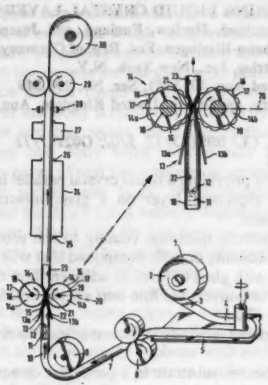
3. A method as claimed in claim 1, and further comprising the step of repeating said introducing step with a different valve metal after the termination of said introducing step with said one valve metal to coat the particles already coated with said one valve metal with a layer of said different valve metal.

4,353,939

PROCESS FOR THE MANUFACTURE OF TUBING BASED ON CELLULOSE HYDRATE HAVING A COATING ON ITS INSIDE AND APPARATUS FOR CARRYING OUT THE PROCESS

Reinhold Becker, Wiesbaden; Heinz Källberer, Walluf, and Richard Regner, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,933
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012251
Int. Cl.³ B05D *1/40, 7/22*
U.S. Cl. 427—238 29 Claims



1. A process for coating the inside of a length of tubing essentially consisting of cellulose hydrate, comprising the steps of:

forming at least one loop of tubing having a cavity therein with a downwardly inclined portion and an upwardly inclined portion;

filling the cavity of the tubing forming the loop with coating liquid;

transporting the tubing along its longitudinal axis in a substantially vertically upward direction to coat the inside surface of the tubing above the level of the coating liquid with an initial layer of coating liquid;

constricting the tubing adjacent to and above the level of the coating liquid with a metering device having a constriction zone which flattens a portion of the tubing passing therethrough to substantially eliminate all of the initial layer thereon and partially flattens the remaining portion of the tubing to allow a desired quantity of coating liquid to remain on the tubing issuing from the constriction zone;

filling the cavity of the tubing immediately upon issuance from the constriction zone with support gas in order to at least partially inflate the tubing; and

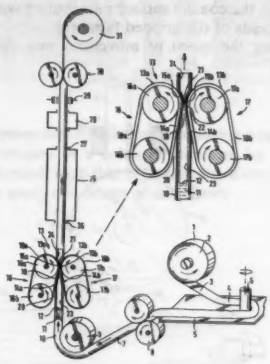
exposing the tubing to the action of heat at a sufficiently high temperature to remove the coating liquid and to fuse the coating layer to the inside thereof and form an uninterrupted film of uniform thickness on the inside o the tubing.

4,353,940

PROCESS FOR THE MANUFACTURE OF TUBING HAVING A COATING ON ITS INSIDE AND APPARATUS FOR CARRYING OUT THE PROCESS

Reinhold Becker, Wiesbaden; Heinz Källberer, Walluf, and Richard Regner, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,945
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012252
Int. Cl.³ B05D *1/40, 7/22*
U.S. Cl. 427—238 26 Claims



1. A process for coating the inside surface of a length of tubing esentially consisting of cellulose hydrate, comprising the steps of:

forming at least one loop of tubing having a cavity therein with a downwardly inclined portion and an upwardly inclined portion;

filling the cavity of the tubing forming the loop with a coating liquid;

transporting the tubing along its longitudinal axis in a substantially vertically upward direction to coat the inside of the tubing above the level of the coating liquid with an initial layer of coating liquid;

constricting the tubing adjacent to and above the level of the coating liquid along a constriction zone transverse to the longitudinal axis of the tubing, the constriction zone progressively diminishing in width in the direction of travel of the tubing to reduce the thickness of the initial layer and form a thin layer of desired thickness of the inside of the tubing issuing from the constriction zone;

filling the cavity of the tubing immediately upon issuance from the constriction zone with support gas in order to at least partially inflate the tubing; and

exposing the tubing to heat at a sufficient temperature to remove the coating liquid and to fuse the coating layer to the inside of the tubing and form an uninterrupted film of uniform thickness thereon.

4,353,941

APPARATUS AND METHOD OF FORMING SELF-LOCKING FASTENER

James L. Bowman, Cincinnati, Ohio, assignor to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Continuation of Ser. No. 640,028, Dec. 12, 1975, abandoned. This application Sep. 5, 1980, Ser. No. 184,461
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—287 3 Claims

1. A method for forming a self-locking patch-type threaded fastener is which the threads include crests and grooves, said grooves including cooperating thread flanks, and wherein said

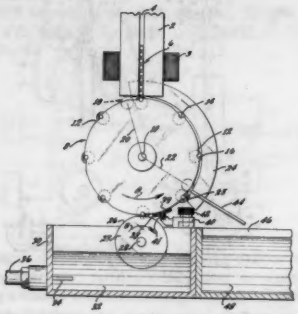
patch includes individual segments of plastic material in said grooves and securely adhered directly to the thread flanks and separated by the crest threads, whereby the major diameter of the fastener remains essentially unchanged, said method comprising:

heating a threaded metal fastener having crests and grooves, said grooves cooperating adjacent thread flanks;

gripping said heated threaded metal fastener and moving said gripped heated fastener along an arcuate path in a continuous motion;

placing a heated liquid polyethylene terephthalate resin on a contact surface and moving the contact surface along a path which is substantially tangential to the arcuate path of movement of the threaded fastener at at least one point to bring the contact surface into contact with a portion of the threads of the gripped fastener;

controlling the speed of movement and the direction of



movement of the contact surface during contact with the threads of said heated threaded fastener to provide an even transfer of said heated liquid resin from the contact surface directly to the portion of the fastener threads in contact therewith whereby said liquid resin directly wets said fastener threads and flows into the grooves between adjacent crests to form individual pools contacting the adjacent thread flanks and separated by the crests of said threads to form a patch which extends axially of the fastener;

ungripping the fastener after transferring resin to the fastener threads; and

quenching said fastener and the resin in said grooves to rapidly solidify the resin on said fastener and to cause said resin to adhere directly to said fastener threads thereby forming a patch of individual segments securely and directly adhered in said grooves and to the adjacent thread flanks and separated by the crests of said threads.

4,353,942

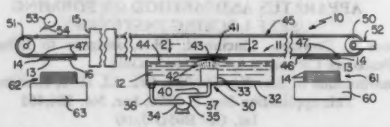
COATING METHOD

Richard D. Carey, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 17, 1980, Ser. No. 207,585

Int. Cl.³ B05D *1/18*

U.S. Cl. 427—434.3 **6 Claims**



1. In a method for providing a coating on irregular surface means of a workpiece defined by metal support means for a railway vehicle, said support means comprising a metal sheet having a planar surface and a grid-like metal structure fixed against said planar surface, said irregular surface means being disposed in multiple planes and comprised of said grid-like structure and said planar surface; comprising the steps of providing a reservoir containing a substantially nonmetallic liquid coating material, applying a liquid film of said liquid coating material on all portions of said irregular surface means against said grid-like structure and said planar surface, and drying said liquid film to solidify same and define said coating, said applying step comprising the steps of producing a standing wave of said liquid coating material in a stationary position, forming a crest in said standing wave disposed above the substantially planar main surface of said material, said crest having a dimension which is at least as large as one dimension of said irregular surface means, and moving said work piece relative to said standing wave so that said liquid coating material engages said irregular surface means and defines said liquid film.

4,353,943

ALIGNING LIQUID CRYSTAL LAYERS

William A. Crossland, Harlow, England, and Joseph H. Morrissy, Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,549

Claims priority, application United Kingdom, Aug. 18, 1980, 8026902

Int. Cl.³ B05D *3/12, 3/02;* G02F *1/13*

U.S. Cl. 428—1 **9 Claims**

1. A method of providing a liquid crystal parallel homogeneous molecular alignment layer on a glass substrate which method comprises:

applying a uniform thickness coating to the substrate of a solution containing organic compound that will hydrolyze in contact with glass to form an adherent film that can be pyrolyzed to convert the film into a layer consisting of or containing silica;

heating the coated substrate sufficient at least to drive off the solvent;

rubbing the coated substrate in a particular direction; and

firing the coated substrate to pyrolyze the film.

4,353,944

SHOE SCRAPER MAT

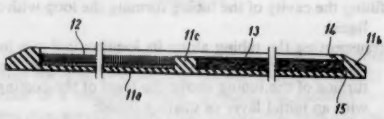
Hiroyuki Tarui, 9, Chikko 2-Chome, Wakayama-Shi, Wakayama-Ken, Japan

Filed May 2, 1980, Ser. No. 146,543

Claims priority, application Japan, Nov. 10, 1979, 54-156308[U]; Nov. 10, 1979, 54-156309[U]

Int. Cl.³ A47L *23/22*

U.S. Cl. 428—74 **3 Claims**



1. A shoe scraper mat, comprising:

a mat holder having a bottom wall, integral side walls extending upwardly from the perimeter of said bottom wall and an integral partition wall extending upwardly from the central portion of said bottom wall so that said side walls and said partition wall define two shallow, mat-holding recesses, said mat bolder being made of heavy gauge soft rubber so that the mat holder has good positional stability and possesses compressive rebound elasticity;

a rough scraper mat body disposed in and substantially completely filling one of said recesses, said rough scraper mat body being a laminate of irregularly coiled, undulat-

ing, stiff filaments which are interlaced, interlocked and bonded with each other and are distributed sparsely in a multi-layer state to provide a relatively large void volume in said rough scraper mat body so that said rough scraper mat body is effective for scraping off and retaining dirt from shoes;

a finishing scraper mat body disposed in and substantially completely filling the other of said recesses, said finishing scraper mat body being made of a carpet piece with the upper surface of said finishing scraper mat body being downwardly offset from the upper edges of said side walls;

said side walls continuing with the same lateral width past both said mat bodies, the portions of said side walls adjacent the marginal edges of only said rough scraper mat body having along their inner surfaces laterally outwardly extending recessed portions which recessed portions snugly receive therein the marginal portions of only said rough scraper mat body, said recessed portions forming the upper edges of said side walls adjacent the marginal edges of only said rough scraper mat body as integral, inwardly projecting lips of the same soft rubber material, which lips overlie the marginal edge portions of the upper surface of said rough scraper body so that said rough scraper mat body is releasably retained by said soft rubber lips in said one recess, the upper surface of said rough scraper mat body being downwardly offset from the upper edges of said lips whereby to retain dirt within said rough scraper mat body, the filaments of said rough scraper mat body being entirely disposed below the lower surfaces of said lips, the top surfaces of of the lips being coplanar with the top surface of the portions of the side walls bounding said other recess;

the upper edge of said partition wall being downwardly offset from the upper edges of said side walls, both said mat bodies having substantially planar upper surfaces which are substantially coplanar with each other and with the upper edge of said partition wall and with the underside of said lips, the recessed portions of the side wall extending from one end of said partition around the periphery of said one recess to the other end of said partition, but not beyond said partition ends or into the other recess.

4,353,945

FLOCKED, FOAM-COATED, WATER VAPOR PERMEABLE, BACTERIAL BARRIER

Arthur J. Sampson, Belle Meade, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 956,840, Nov. 2, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,822

Int. Cl.³ B32B *3/26, 33/00*

U.S. Cl. 428—90 **22 Claims**

1. A water vapor permeable bacterial barrier having the appearance of fabric, and being capable of filtering bacteria, comprising a microporous plastic film, said film being both water vapor permeable and capable of filtering bacteria, said film being coated on at least one surface with a foamed latex polymer, and flocked fibers on the exterior surface of said foamed latex polymer.

4,353,946

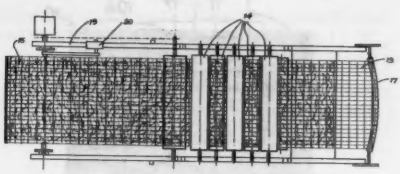
EROSION CONTROL MEANS

Geoffrey Bowers, "Mootawingee" Via Bowna, Australia, assignor to Seasonmakers Pty. (Australia) Lts, Beaconsfield, Australia

Filed Mar. 13, 1981, Ser. No. 243,338

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—109 **2 Claims**



1. A soil erosion control blanket, comprising a mat of woodwool fibers retained in a coherent structure by means of a biodegradable mesh such that at least some of the fibres interlock with the mesh and others of said fibres.

4,353,947

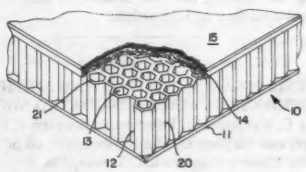
LAMINATED COMPOSITE STRUCTURE AND METHOD OF MANUFACTURE

Charles D. Northcutt, Midland, Tex., assignor to International Harvester Co., Chicago, Ill.

Filed Oct. 5, 1981, Ser. No. 308,642

Int. Cl.³ B32B *3/12, 5/12*

U.S. Cl. 428—116 **11 Claims**



1. A laminated composite structure comprising:

a bottom layer of high tensile strength woven fibers impregnated with a thermosetting resin;

a rigid cellular core having a plurality of interconnected walls defining cells open at the top face and at the bottom face of said core, said cells being substantially devoid of said resin, said bottom face of said core structure being operatively adhered to said bottom skin layer;

a reservoir layer comprising randomly oriented high tensile strength fiber reinforcing material impregnated with said resin disposed on and adhered to said top face of said core structure, said reservoir layer being sponge-like in the uncured, uncompressed state such that resin is absorbed and held for subsequent release during compression;

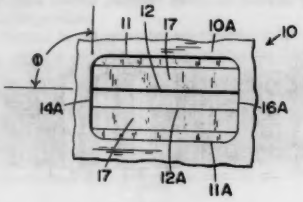
a top layer of high tensile strength woven fibers disposed above said reservoir layer, said reservoir layer releasing resin to impregnate said top fabric layer upon compression of said layers; and

all of said layers and core being compressed and cured into a laminated composite structure.

4,353,948
HOLE TECHNOLOGY

Roland Thoms, Mullheim, Fed. Rep. of Germany, assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed May 12, 1980, Ser. No. 148,683
Int. Cl.³ H01L 7/50; B32B 3/10
U.S. Cl. 428—131 10 Claims



1. A member having a line of sight opening therein comprising:

an article having a first surface and a second surface;

a recess located in said first surface, said recess having side walls with said side walls and said first surface coacting to define an outline of a portion of a line of sight opening in said article;

an opening in said second surface, said opening defined by edges located in said second surface, said opening extending from said second surface into said recess so that a portion of said edges of said opening in said second surface forms an outline of a portion of said line of sight opening in said article, said line of sight opening comprising an opening partially bounded by said portion of edges of said recess in said first surface and partially bounded by said edges of the opening in said second surface.

6. The method of making line of sight openings in an article having two surfaces comprising the steps of:

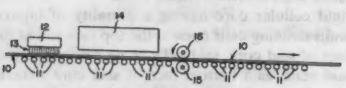
forming a recess with side walls and a bottom in a first surface of an article with at least a portion of the side walls of the recess diverging away from said recess to provide an overhanging edge; and

forming an opening into the bottom of said recess from the opposite surface of said article.

4,353,949
EMBOSSABLE COATING AND METHOD OF PRODUCING EMBOSSED COATED SUBSTRATE

Stanley C. Kyminas, St. Petersburg; Bernard J. Einhaus, Clearwater, and Stephen G. Hinds, Seminole, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Apr. 8, 1981, Ser. No. 252,120
Int. Cl.³ B05D 3/12
U.S. Cl. 428—195 51 Claims



1. A method for producing a decorative design on a surface of a substrate comprising the steps of:

(a) applying to said surface of said substrate an embossable coating comprising a filler, a film-forming binder adapted to bind the filler particles together and to adhere said filler to said substrate, a moisture control agent, a release agent, and a liquid;

(b) drying said coating to remove a major portion of said liquid therefrom, the quantity of liquid retained by said coating being sufficient to make said coating pliable and readily impressible by an embossing means; and

(c) subjecting said pliable coating to pressure contact with said embossing means to impress a decorative design into said coating,

wherein the quantity of said moisture control agent is sufficient to promote controlled moisture evaporation from said coating and the quantity of said release agent is sufficient to render said coating cleanly separable from said embossing means.

11. The method of claim 1 wherein said liquid is water.

27. The method of claim 11 wherein said pliable coating is additionally subjected in step (c) to two or more color printings.

28. The method of claim 27 wherein said substrate is not substantially compressed by said embossing means.

30. The method of claim 1 wherein said substrate is not substantially compressed by said embossing means.

4,353,950
STAIN-RESISTANT COOKWARE MULTI-LAYER COATING SYSTEM COMPRISING PIGMENTS AND A TRANSLUSCENT OUTER LAYER

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 6, 1979, Ser. No. 55,478
Int. Cl.³ A47J 36/04, 37/10; B32B 27/08, 27/20
U.S. Cl. 428—195 14 Claims

1. A cookware article comprising a substrate coated with a heat-stable coating system comprising three layers, each layer containing a polymer stable at temperatures above 300° C., said layers including

a primer layer in direct contact with the substrate and which adheres the coating system to the substrate,

an intermediate layer in contact with the primer layer and containing pigments which mask the brown color of food stains that develop in the coating system during cooking, and

a light-transmitting topcoat layer in contact with the intermediate layer and containing mica or mica platelets coated with pigment, giving a sparkling appearance to the coating system.

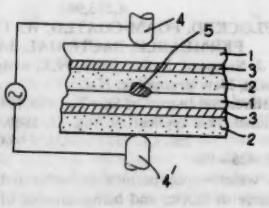
11. The article of claim 1 containing an electrical resistance heat source.

12. The article of claim 11 in which the electrical heat source is in the form of a discrete pattern on the opposite side of the substrate from the coating system.

4,353,951
SPOT-WELDABLE BONDED CLAD METAL PLATE

Teruo Yukitoshi, Amagasaki; Takao Hino, Osaka, and Yoshinobu Ohya, Amagasaki, all of Japan, assignors to Daicel Chemical Industries, Ltd. and Sumitomo Metal Industries, Ltd., both of Osaka, Japan

Filed Jun. 1, 1981, Ser. No. 269,291
Claims priority, application Japan, Jun. 4, 1980, 55-74387
Int. Cl.³ B32B 27/14
U.S. Cl. 428—198 8 Claims



1. A laminated plate-form article capable of being welded to a like article, comprising:

a first, electrically conductive, metal sheet having a thickness of from 0.05 to 1.0 mm;

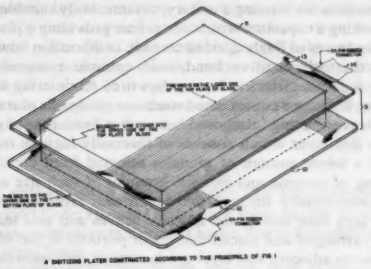
a second, electrically conductive, metal sheet having a thickness of at least 0.4 mm, said first and second sheets having mutually opposing surfaces;

an electrically conductive adhesive layer disposed between and bonded to said opposing surfaces of said sheets, said adhesive layer having a thickness of from 15 to 60 microns, said adhesive layer comprising a mixture of an adhesive and electrically conductive particles, said adhesive layer containing from 10 to 100 g/m^2 of said electrically conductive particles, said electrically conductive particles having a particle size in the range of from 0.5 to 1.5 times the thickness of said adhesive layer.

4,353,952
TRANSPARENT DIGITIZER PLATEN

Lawrence E. Brown; James L. Bauer, and Gerald W. Scheck, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 79,865, Sep. 28, 1979, Pat. No. 4,288,282.
This application Apr. 27, 1981, Ser. No. 258,220
Int. Cl.³ B32B *3/00, 7/14;* B60L *1/02*
U.S. Cl. 428—201 **1 Claim**



A DIGITIZING PLATEN CONSTRUCTED ACCORDING TO THE PRINCIPLES OF FIG. 1

1. A transparent digitizer platen comprising:

a first transparent substrate;

a first metallic grid;

a first pattern of photopolymerized adhesive matching the first metallic grid, and attaching the first metallic grid to the first transparent substrate;

a second transparent substrate;

a second metallic grid;

a second pattern of photopolymerized adhesive matching the second metallic grid, and attaching the second metallic grid to the second transparent substrate;

a layer of transparent adhesive bonding the first and second transparent substrates together, and;

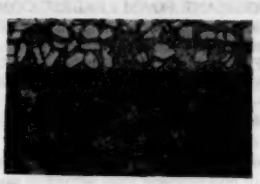
the first and second metallic grids being upon those surfaces of the first and second transparent substrates in contact with the transparent adhesive.

4,353,953
INTEGRAL COMPOSITE OF POLYCRYSTALLINE DIAMOND AND/OR CUBIC BORON NITRIDE BODY PHASE AND SUBSTRATE PHASE

Charles R. Morelock, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 974,496, Dec. 29, 1978, Pat. No. 4,247,304.
This application Apr. 14, 1980, Ser. No. 139,805
Int. Cl.³ B32B *7/02, 9/04*
U.S. Cl. 428—213 **14 Claims**

1. A self-supporting integral composite consisting essentially of a polycrystalline body phase integrally bonded to a substrate supporting phase, said polycrystalline body phase consisting essentially of crystals selected from the group consisting of diamond, cubic boron nitride and mixtures thereof adherently bonded together by a bonding medium consisting essentially of silicon carbide and elemental silicon wherein the volume of said silicon carbide and said silicon each is at least about 1% by volume of said polycrystalline body phase, said crystals ranging in size from submicron up to about 2000 microns, the volume of said crystals ranging from about 1% by volume to about but less than 80% by volume of said polycrystalline body phase, said bonding medium being present in an amount ranging up to about 99% by volume of said polycrystalline body phase, said bonding medium being distributed at least substantially uniformly throughout said polycrystalline body phase, the portion of said bonding medium in contact with the surface of said crystals being silicon carbide, said polycrystalline body



phase containing non-diamond elemental carbon phase in an amount ranging up to about 5% by volume of the polycrystalline body phase, said non-diamond elemental carbon phase having no significant deleterious effect on the mechanical properties of said polycrystalline body phase, said polycrystalline body phase being pore free or at least substantially pore-free, said substrate supporting phase consisting essentially of elemental non-diamond carbon, said substrate supporting phase having a thickness of at least about twice the thickness of said polycrystalline body phase.

4,353,954
FLEXIBLE PRINTED CIRCUIT BASE BOARD AND METHOD FOR PRODUCING THE SAME

Sigenori Yamaoka; Akinobu Kusuhara, and Toshinaga Endo, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

PCT No. PCT/JP79/00150, § 371 Date Feb. 5, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO80/00117, PCT Pub. Date Jan. 24, 1980
PCT Filed Jun. 13, 1979, Ser. No. 191,215
Claims priority, application Japan, Jun. 14, 1978, 53-70895
Int. Cl.³ H05K *1/00;* B32B *15/08, 27/34, 27/38*
U.S. Cl. 428—216 **16 Claims**

1. A method for producing a flexible printed circuit base board, characterized by

coating an organic solvent solution of a second heat-resistant resin consisting essentially of the reaction product of (1) a first heat-resistant resin having a molecular weight of at least about 5,000 and a heterocylic ring, selected from the group consisting of polyimide, polyesterimide, polyhydantoin, polyimidazopyrrolone, polybenzimidazole and polyparabanic acid imide, these having in their molecule groups reactive with epoxy group, with (2) an epoxy resin having at least two epoxy groups in the molecule, on a metal foil having good electrical conductivity and a thickness of 1 to 150μ; and

drying and curing the same to form a flexible cured film of said resin composition having a thickness of 0.5 to 300μ on said metal foil surface.

9. A flexible printed circuit base board consisting essentially of a metal foil having good electrical conductivity and a thickness of 1 to 150μ; and a flexible film of a cured resin consisting essentially of the reaction product of a heat-resistant resin having a molecular weight of at least about 5,000 and a heterocyclic ring, selected from the group consisting of polyimide, polyesterimide, polyhydantoin, polyimidazopyrrolone, polybenzimidazole and polyparabanic acid imide, these having in their molecule groups reactive with epoxy group, and an epoxy resin containing at least two epoxy groups in the mole-

cule, said film having a thickness of 0.5 to 300μ, said metal foil and said resin film being bonded directly to each other through no adhesive, and wherein said metal foil is selected from the group consisting of copper foil, aluminum foil, nicrome foil, nickel foil, and titanium foil.

4,353,955

POLYURETHANE FOAM - FABRIC COMPOSITE

John H. Cook, Livonia, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 12, 1981, Ser. No. 320,173
Int. Cl.³ B05D *3/00;* B29C *23/00, 5/00;* B32B *9/04*
U.S. Cl. 428—246 18 Claims

10. The composite material comprising
(a) a layer of fabric,
(b) a silicone surfactant coating on said fabric, and
(c) a layer of polyurethane foam affixed to said coated portion of said fabric.

11. The composite of claim 10 wherein said fabric is textile fabric reinforced vinyl.

4,353,956

HELICAL NET

George S. Nalle, Jr., 401 Inwood Rd., Austin, Tex. 78746

Filed Jun. 5, 1981, Ser. No. 270,659
Int. Cl.³ B32B *5/02, 7/10;* D03D *9/00*
U.S. Cl. 428—255 9 Claims

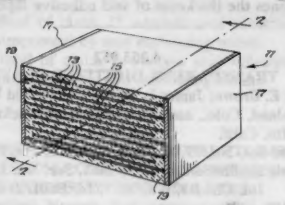
1. A net-like structure comprising at least two crossing layers, the first of said layers being a plurality of first helical filaments the axes of which are parallel and the second of said layers being a plurality of second helical filaments the axes of which are parallel but intersect the axes of said first helical filaments, said first and second helical filaments being fused together at each point of intersection.

4,353,957

CERAMIC MATRICES FOR ELECTRONIC DEVICES AND PROCESS FOR FORMING SAME

Truman C. Rutt, Niagara Falls, and James A. Stynes, Lewiston, both of N.Y., assignors to Tam Ceramics Inc., Niagara Falls, N.Y.

Division of Ser. No. 536,274, Dec. 24, 1974, abandoned, which is a division of Ser. No. 400,243, Sep. 24, 1973, Pat. No. 3,879,645.
This application Oct. 26, 1977, Ser. No. 845,497
Int. Cl.³ C04B *33/32;* H05K *1/00*
U.S. Cl. 428—292 26 Claims



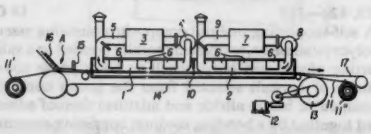
1. A process for forming a unitary, ceramic body suitable for use in making a capacitor which comprises: providing a plurality of thin leaves of finely divided ceramic composition bonded with a thermally-fugitive bond, said ceramic composition forming a dense, dielectric layer when fired to sintering temperatures; forming a consolidated stack consisting of a plurality of said leaves having interposed between at least two of said leaves a thin layer which consists of thermally-fugitive material and a minor amount of granules selected from the class consisting of ceramic and metallic granules of such size as to extend substantially through said layer, said layer having a smaller area than that of the adjacent leaves and said leaves being so arranged and placed that major portions of the edges of the leaves adjacent said layer are in contact with each other with said layer extending to an edge region of said consolidated stack; and firing said consolidated stack under suitable conditions at temperatures sufficiently high to remove said thermally-fugitive materials and to sinter said ceramic composition, whereby to form an integral, monolithic, sintered ceramic body having a plurality of thin strata of dense dielectric material, substantial portions of the adjacent surfaces of at least two of said strata being separated to provide a space therebetween and being joined only at edge portions thereof and by at least one distinct pillar formed of material selected from the class of ceramic and metallic materials extending from the top to the bottom of said space, substantially all of said pillars being separate when there are a plurality thereof.

4,353,958

GREEN CERAMIC TAPES AND METHOD OF PRODUCING THEM

Katsuhiko Kita; Junzo Fukuda, both of Nagoya; Hidemasa Ohmura, and Takeya Sakai, both of Wakayama, all of Japan, assignors to Narumi China Corporation, Nagoya and Kao Soap Co., Ltd., Toyko, both of, Japan

Filed Mar. 20, 1980, Ser. No. 122,852
Claims priority, application Japan, Feb. 22, 1979, 54-20300
Int. Cl.³ B32B *5/16;* C04B *35/10;* C08K *3/00*
U.S. Cl. 428—329 22 Claims



1. A green ceramic tape, comprising:

a fine ceramic powder and a water-compatible polyurethane binder in a solvent selected from the group consisting of water and mixtures of water with water soluble organic solvents, said binder being present in a proportion of 2 to 15 parts by weight per 100 parts by weight of said ceramic powder.

4,353,959

ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE HAVING AN ACRYLIC PRIMER LAYER CONTAINING A U.V. ABSORBING COMPOUND

Daniel R. Olson, Schenectady, N.Y., and John C. Goossens, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 21, 1979, Ser. No. 106,264

Int. Cl.³ B32B *27/08, 27/18, 27/20;* **G02B** *1/04*

U.S. Cl. 428—331 **24 Claims**

1. An improved coated polycarbonate article having improved durability of adhesion of the coating to the polycarbonate comprising a polycarbonate substrate having adhered thereto on at least one surface thereof (i) an adhesion promoting primer layer containing a thermoset acrylic polymer, and (ii) a top coat disposed on said primer layer comprised of a colloidal silica filled thermoset organopolysiloxane; the improvement consisting of said primer layer containing from about 15 to about 75 weight percent of at least one ultraviolet radiation absorbing compound and from about 25 to about 85 weight percent of a thermoset acrylic polymer.

4,353,960

COMPOSITE AND CONJUGATE FILAMENTS

Hiroyuki Endo; Hiroshi Ohhira, and Tohru Sasaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 76,991, Sep. 19, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,766

Claims priority, application Japan, Sep. 21, 1978, 53-116130; Apr. 8, 1980, 55-46079

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—373 **3 Claims**

1. A composite filament for use in in-water submerged services, said filament comprising a core and a sheath surrounding the latter, said core comprising one or a plurality of core filamentary elements(s) made of vinylidene fluoride resin and said sheath being composed of polyamide resin the composing ratio as measured in respective cross-sectional areas of said vinylidene fluoride resin and said polyamide resin being specified within the range from 1/99 to 40/60.

4,353,961

SHAPED ARTICLE FROM CROSSLINKED FLUOROCARBON POLYMER

Alan J. Gotcher, Sunnyvale, and Paul B. Germeraad, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 833,185, Sep. 14, 1977, Pat. No. 4,155,823, which is a continuation-in-part of Ser. No. 731,352, Oct. 12, 1976, abandoned. This application Feb. 2, 1979, Ser. No. 9,120

Int. Cl.³ C08J *3/28;* **B32B** *15/20*

U.S. Cl. 428—380 **16 Claims**

1. A shaped article comprising an irradiation crosslinked fluorocarbon polymer, said polymer having a melting point prior to crosslinking of at least 200°, said article having been subjected to at least one forming operation at a temperature in excess of the melting point of said polymer prior to being crosslinked and thereafter crosslinked by ionizing radiation at a dose level of up to about 30 megarads, said copolymer containing from at least about 4.0 to about 30.0 wt. % of cross-linking agent at the commencement of said radiation, and having an M100 at 320° of at least about 450 psi following radiation.

7. An article in accordance with claim 1 wherein said radiation crosslinked polymer is an insulating material.

8. An article in accordance with claim 7 wherein said article is a wire construction comprising at least one electrical conductor with at least one irradiation crosslinked ethylene-tetrafluoroethylene polymer insulating layer surrounding at least a portion of said conductor.

4,353,962

IN-FLIGHT ENCAPSULATION OF PARTICLES

Chester M. Himel, Athens, Ga., and Nathan F. Cardarelli, Akron, Ohio, assignors to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 149,982, May 15, 1980, Pat. No. 4,286,020, which is a continuation of Ser. No. 922,171, Jul. 5, 1978, abandoned. This application May 18, 1981, Ser. No. 264,822

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ B32B *5/16;* **B01J** *13/00;* **B29C** *6/00, 13/00*

U.S. Cl. 428—407 **37 Claims**

1. A process for the in situ encapsulation of particles between a spraying apparatus and an earth target, comprising the steps of:

(a) preparing a self-encapsulating polymer-containing dispersion;

said dispersion comprising by weight from about 0.1 percent to about 25 percent of a film-forming polymer capable of encapsulating a particle by coacervation, from about 35 percent to about 99 percent of a liquid, said liquid being a compound which will disperse said polymer, and from about 1 percent to about 40 percent of particles, or from about 0.01 percent to about 40 percent when said particle is a pheromone, said particle being soluble or dispersible in said solvent;

in situ encapsulating said soluble or dispersible particle by:

spraying into the earth's atmosphere said dispersion containing said soluble or dispersible particle from a spray apparatus, and immediately thereafter;

evaporating said solvent in said earth's atmosphere and

coacervating during the passage from said spraying apparatus to an earth target said polymer and said particle in said earth's atmosphere so that said polymer substantially encapsulates said particle; and

concurrently and directly applying said encapsulated particle to an earth target.

14. An in situ self-encapsulating polymer-containing formulation for concurrent and direct application to an earth target, comprising a self-encapsulating polymer-containing dispersion; said dispersion comprising by weight

from about 0.1 percent to about 25 percent of a film-forming polymer having a molecular weight greater than 300,000 and capable of encapsulating a particle by coacervation, from about 35 percent to about 99 percent of a liquid, and from about 1 percent to about 40 percent of a particle, or from about 0.01 to about 40 percent when said particle is a pheromone,

said particle being soluble or dispersible in said solvent;

said liquid being a compound in which said polymer is dispersible.

24. An encapsulated particle having been in situ encapsulated and concurrently and directly adhered to an earth target, comprising:

a particle system and a wall system, said wall system comprising a polymer film encapsulating said core system,

said polymer film having been made from a colloidal or an emulsion dispersion type polymer,

said particle and wall system having been made from a dispersion comprising by weight from about 0.1 percent to about 25 percent of a film-forming polymer having a molecular weight greater than 300,000 and capable of encapsulating a particle by coacervation, from about 35 percent to about 99 percent of a liquid, and from about 1

percent to about 40 percent of a particle, or from about 0.01 to about 40 percent when said particle is a pheromone,

said particle being soluble or dispersible in said solvent;

said liquid being a compound in which said polymer is dispersible.

4,353,963

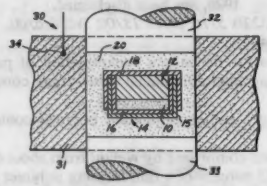
PROCESS FOR CEMENTING DIAMOND TO SILICON-SILICON CARBIDE COMPOSITE AND ARTICLE PRODUCED THEREBY

Minyoung Lee, Schenectady, and Lawrence E. Szala, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1980, Ser. No. 217,271

Int. Cl.³ B32B *9/00*; B24D *3/02*; C22C *1/04*; B32B *9/04*

U.S. Cl. 428—408 **15 Claims**



1. In a process for cementing diamond particles together and bonding the cemented diamond particles to a substrate wherein an assembly comprising a volume of said diamond particles, said substrate, a silicon atom-yielding medium as the source of silicon atoms and containment means therefor is provided in a stabilized geometry and said assembly of stabilized geometry is hot-pressed at a temperature in excess of the melting point of said silicon atom-yielding medium and at a pressure sufficiently high to cause molten silicon atom-yielding medium to infiltrate the interstices between said diamond particles, said temperature and pressure simultaneously employed for the hot pressing having values below the diamond stable region of the phase diagram of carbon, the improvement comprising:

(a) employing a body of silicon-silicon carbide composite both as the substrate and as the primary source of silicon atoms to accomplish the cementing and bonding required and

(b) heating above about 1500° C.

13. An article of manufacture comprising a base portion of densified silicon-silicon carbide composite material having silicon content of less than about 15 volume percent and a dense cemented polycrystalline diamond mass, said diamond mass being bonded to said silicon-silicon carbide composite.

4,353,964

PROCESS FOR THE MANUFACTURE OF A COMPOSITE FIBER COMPONENT

Wilhelm G. Grimm, Munich, and Rudolf Schindler, Riemerling, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

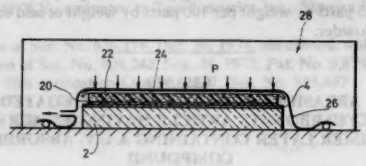
Filed Jan. 12, 1981, Ser. No. 223,940

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000216

Int. Cl.³ B29D *11/00*

U.S. Cl. 428—408 **23 Claims**

1. A process for the manufacture of a composite heat hardenable fiber component having a high surface quality comprising coating the surface of a glass mold, having a smoothly worked surface, uniformly with a thin coating of a separating agent which can be detached from the mold surface, the thickness of the coating being not greater than the maximum surface roughness of the composite fiber component, applying the hardenable composite fiber material onto the coating, hardening the hardenable material and then removing the hardenable component and the coating of the separating agent from the surface of the glass mold.



4,353,965

ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE HAVING AN ACRYLIC PRIMER LAYER CONTAINING A U.V. ABSORBING COMPOUND

Daniel R. Olson, Schenectady, N.Y., and John C. Goossens, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 21, 1979, Ser. No. 106,263

Int. Cl.³ B32B *27/08, 27/18*; G02B *1/04*

U.S. Cl. 428—412 **8 Claims**

1. In an improved coated poycarbonate article having abrasion and chemical solvent resistance and exhibiting improved adhesion and weatherability of the coating to the polycarbonate substrate comprising a polycarbonate substrate having adhered thereto on at least one surface thereof (i) an adhesion promoting thermoset acrylic primer layer; and (ii) a top coat adherently disposed on said primer layer comprised of a thermoset organopolysiloxane; the improvement consisting of said primer layer consisting essentially of from about 25 to about 85 weight percent of at least one thermoset acrylic polymer and from about 15 to about 75 weight percent of at least one ultraviolet light screening compound.

4,353,966

COMPOSITE BONDING

Elias Snitzer, West Hartford, and James F. Bacon, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1980, Ser. No. 215,282

Int. Cl.³ B32B *17/12*

U.S. Cl. 428—428 **15 Claims**

1. A process of bonding a plurality of thermally stable, high strength, graphite fiber reinforced glass matrix composite materials together comprising applying to the surface of at least one of the composite materials to be bonded, a mixture of a low softening point glass and a high softening point-low coefficient of thermal expansion material in such proportions that at bonding temperatures the constituents in the mixture interdiffuse to form a bond material with a bond strength greater than 7×10^3 psi (4.92×10^6 kgs per square meter).

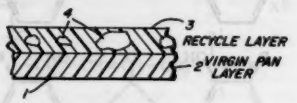
10. A bonded composite material comprising a plurality of individual thermally stable high strength graphite fiber reinforced glass matrix composite components bonded together with a bond material comprising a mixture of low coefficient of thermal expansion high lead oxide content glaze, low coefficient of thermal expansion beta-spodumene, and colloidal silica, the bonded composite having a bond strength greater than 7×10^3 pounds per square inch (4.827×10^7 NT/M^2).

4,353,967

MULTILAYER POLYACRYLONITRILE FILM

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 143,581, Apr. 25, 1980, Pat. No. 4,287,147.
This application Apr. 3, 1981, Ser. No. 250,807
Int. Cl.³ B32B *27/80, 5/16*
U.S. Cl. 428—520 7 Claims



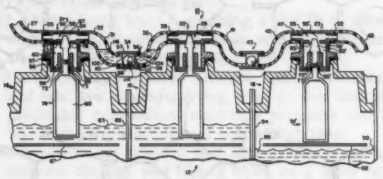
1. A multilayer oriented polyacrylonitrile film comprising a first layer of substantially homogeneous polyacrylonitrile homopolymer resin in contact with a second non-homogeneous polyacrylonitrile layer containing undissolved polyacrylonitrile resin particles.

4,353,968

BATTERY WATER-FILLING SYSTEMS AND CHECK VALVES THEREFOR

Robert E. Boyle, 2807 Mitchell, Woodridge, Ill. 60517

Filed Jul. 15, 1981, Ser. No. 283,522
Int. Cl.³ H01M *2/36*
U.S. Cl. 429—64 10 Claims



1. In combination with a system for filling a series of cells of a battery with an electrolyte liquid by distributing it to the cells via a series of cell valves individually associated with each one of the cells for admitting the liquid thereto and for shutting off the flow of liquid thereto when the liquid rises to desired levels therewithin, conduit means interconnecting the cells in fluid communication with a source of electrolyte liquid under pressure, the improvement which comprises:

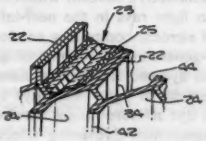
a check valve being connected in fluid communication between two of said cells and including a housing having a substantially horizontal elongated chamber; said chamber having at its opposite ends inlet and outlet ports and having inlet and outlet valve seats, a heavy valve member captured within said chamber for engaging said seats; said ports being connected in fluid communication with said conduit means between two of said valve members for allowing operative flow of liquid through said valve from said inlet to said outlet; and for being urged forcibly into flow-blocking engagement with one of said valve seats by an explosive shock wave caused either upstream or downstream of said valve.

4,353,969

QUASI-BIPOLAR BATTERY CONSTRUCTION AND METHOD OF FABRICATING

Wally E. Rippel, Altadena, and Dean B. Edwards, Monrovia, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 79,476, Sep. 27, 1979, Pat. No. 4,275,130. This application Oct. 9, 1980, Ser. No. 195,513
Int. Cl.³ H01M *6/48*
U.S. Cl. 429—144 22 Claims



1. A battery construction comprising:

integral frameless biplate means including spaced biplate walls having top edge faces and oppositely directed side faces, side walls, and bottom walls defining a chamber therebetween,

lead stripes on both side faces, each stripe on one side face being connected at the top edge face with stripes on the other side face;

a separator-plate carrying active material on opposite faces thereof received within each chamber;

and means to compress and to retain said biplate means and separator-plates in assembled pressure relation.

4,353,970

METHOD AND APPARATUS FOR ELECTROSTATICALLY CHARGING A DIELECTRIC LAYER

Kurt Dryczynski, Hofheim; Günther Schädlich, and Roland Moraw, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,276
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849222
Int. Cl.³ G03G *13/02, 13/22*
U.S. Cl. 430—31 17 Claims

1. A method for electrostatically charging a dielectric layer to a predetermined potential by an AC electric field and a DC electric field, said method comprising steps of:

generating charge carriers around a common electrode by adjusting the AC electric field generated by an AC discharge electrode between said common electrode and said AC discharge electrode to ionize the atmosphere to its saturation value, said charge carriers being generated around said common electrode at a distance from the dielectric layer;

directing said charge carriers to said dielectric layer by a DC electric field generated exclusively by a DC discharge electrode, said DC discharge electrode being said common electrode and being disposed between said AC discharge electrode and said dielectric layer and thereby the charge carriers form a charging current to charge the surface of said dielectric layer, whereby said AC and DC electric fields act on said common electrode without influencing each other; and

modulating at least one of said electric fields during the charging of the dielectric layer.

16. The method according to claim 1, wherein prior to said generating step, said method includes the step of erasing residual charges in the dielectric layer by charging said dielectric layer to zero potential.

4,353,971

SQUARYLIUM DYE AND DIANE BLUE DYE CHARGE GENERATING LAYER MIXTURE FOR ELECTROPHOTOGRAPHIC LIGHT SENSITIVE ELEMENTS AND PROCESSES

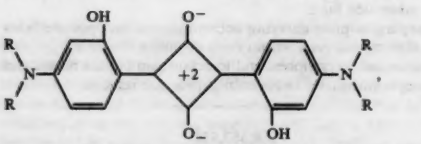
Mike S. H. Chang, Danbury, and Peter G. Edelman, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

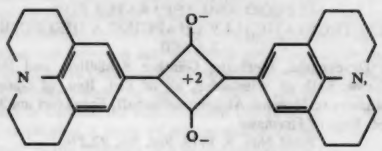
Filed Dec. 8, 1980, Ser. No. 214,320

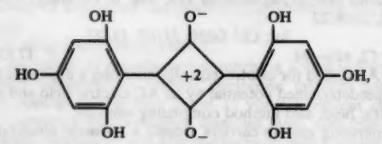
Int. Cl.³ G03G *5/06, 5/09*

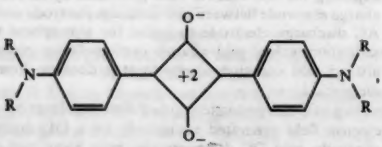
U.S. Cl. 430—58 **12 Claims**

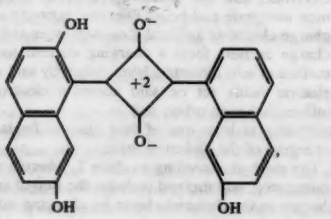
1. A photoconductive element which is extremely sensitive to exposure to light rays in the near-infrared region of the spectrum, said element comprising an electroconductive support, a charge-generating layer comprising a mixture of at least one squarylium dye and at least one diane blue dye in which the weight percent of squarylium dye relating to the total weight of said dye mixture ranges between about 0.05% and 50.0%, said squarylium dye being selected from the group consisting of:











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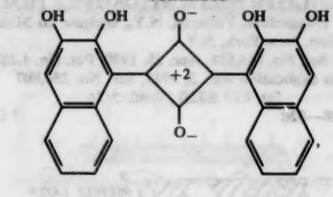

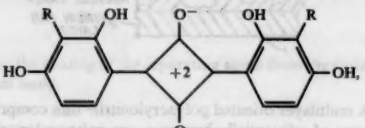

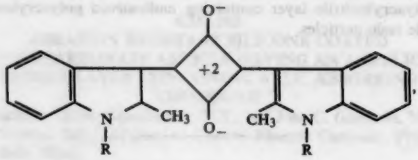

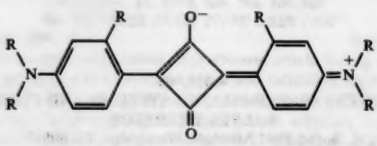

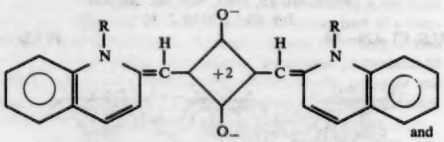

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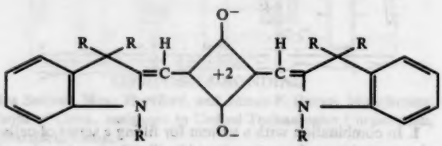


in which R is a methyl or ethyl radical, and a charge transport layer comprising a conventional organic chemical capable of transporting electrical charges generated by said charge generating layer in areas of said element exposed to said light rays.

4,353,972

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL COMPRISING POLYMERIC MORDANT LAYER

Günter Helling, Cologne; Kaspar Wingender; Wolfgang Himmelmann, both of Leverkusen, and Manfred Beck, Odenthal, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,632

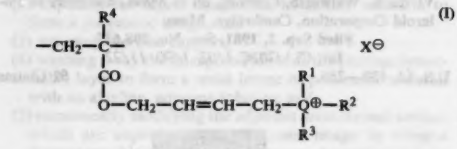
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941818

Int. Cl.³ G03C *1/04*

U.S. Cl. 430—213 **6 Claims**

1. A photographic material comprising a layer support hav-

ing coated thereon at least one image-receiving layer which contains a polymeric mordant for acidic dyes, in which the polymeric mordant is a polymer obtained by addition polymerisation of a mixture of monomers containing at least 10 mole % of a monomer that on addition polymerisation provides recurring structural units of formula I



(I)

in which

Q is a nitrogen or phosphorus atom;

R^1, R^2 and R^3 are the same or different and represent alkyl radicals of 1 to 12 carbon atoms or carbocyclic radicals selected from the group consisting of cycloalkyl, aralkyl and aryl radicals or two of the substituents R^1, R^2 and R^3 together with the Q complete a 5- or 6-membered heterocyclic ring.

R^4 represents hydrogen or methyl

$X^{\ominus}$ represents an anion.

4,353,973

USE OF OXALIC ACID OR AN ACID SALT THEREOF IN COLOR TRANSFER ASSEMBLAGES

Richard W. Wheeler, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,032

Int. Cl.³ G03C *1/40, 5/54, 7/00, 5/24*

U.S. Cl. 430—216 **35 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) a neutralizing layer comprising about 75 to about 150 meq./m^2 of acid, other than oxalic acid, for neutralizing an alkaline processing composition; and

(d) a timing layer located between said neutralizing layer and said dye image-receiving layer so that said alkaline processing composition must first permeate said timing layer before contacting said neutralizing layer;

the improvement wherein said neutralizing layer, a layer adjacent thereto, said timing layer, or a layer adjacent thereto contains about 1 to about 10 meq./m^2 of oxalic acid or an acid salt thereof.

4. The assemblage of claim 1 wherein said oxalic acid or acid salt thereof is present in said neutralizing layer.

4,353,974

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES AND PHOTOGRAPHIC MATERIALS USED IN THIS PROCESS

Terence C. Webb, Danbury; Patrick D. P. Thomas, Chelmsford, and William E. Long, Brentwood, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 23, 1981, Ser. No. 237,012

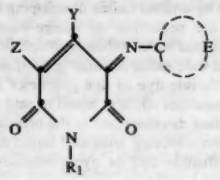
Claims priority, application United Kingdom, Feb. 28, 1980, 8006847

Int. Cl.³ G03C *5/54*

U.S. Cl. 430—218 **34 Claims**

1. A process for the production of a photographic image which comprises the steps of

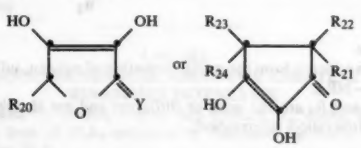
(a) imagewise exposing a photographic assembly which comprises at least during a silver halide developing step, in order optionally a supercoat layer, at least one silver halide emulsion layer, a layer containing a layer substantive hydroxypyridone azamethine compound of the formula



(I)

wherein R_1 is hydrogen, optionally substituted alkyl, aralkyl, cycloalkyl or aryl, or an optionally substituted heterocyclic radical or an amino group, Y is hydrogen, hydroxyl, cyano, —$COOR^1$, —$CONR^1R^2$ or —COR^1, optionally substituted alkyl, aralkyl, cycloalkyl, aryl or an optionally substituted heterocyclic radical, Z is hydrogen or is cyano, —$COOR^3$, —$CONR^3R^4$, —SO_3H, —SO_3^- or —COR^3, where R^1, R^2, R^3 and R^4 each independently are hydrogen, optionally substituted alkyl, aralkyl, cycloalkyl or aryl or an optionally substituted heterocyclic radical, and E represents the atoms necessary to complete an optionally substituted heterocyclic or aromatic ring, and a support, there being optionally one or more interlayers between each of said components,

(b) treating the exposed photographic assembly with an aqueous alkaline processing bath so as to provide in the silver halide emulsion layer or layers a solution or dispersion of a silver halide developer compound selected from the group consisting of a polyhydroxypheonol, an aminoaniline an aminophenol, glycine, a 1-phenyl-3-pyrazolidinone, ascorbic acid or a compound of the formulae



wherein R_{20} is hydrogen, alkyl having 1 to 4 carbon atoms or phenyl, R_{21}, R_{22}, R_{23} and R_{24} are each hydrogen, methyl or ethyl and Y is —O— or —NH—, thereby to develop the latent silver image in the silver halide emulsions(s), and

(c) in the non-latent image areas allowing the silver halide developer to diffuse in a counter-imagewise manner from the silver halide emulsion layer(s) to the layer containing the compound of formula (I) and there to bleach the compound to form a photographic dye image.

4,353,975

DYE-DIFFUSION TRANSFER PROCESS

Wilhelmus Janssens, Aarschot, and Daniël A. Claeys, Mortsel, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 12, 1981, Ser. No. 292,248

Claims priority, application United Kingdom, Sep. 30, 1980, 8031433

Int. Cl.³ G03C *1/40, 1/10, 5/54*

U.S. Cl. 430—239 **11 Claims**

1. A process for the production of (a) dye image(s) by dye diffusion transfer comprising the steps of:

(1) image-wise photo-exposing a photographic colour material, which contains at least one alkali-permeable silver halide hydrophilic colloid layer which contains in operative contact therewith or therein a non-diffusing dye or

dye precursor compound that when contacted with an aqueous alkaline liquid remains immobile in an alkali-permeable colloid layer of said material and is capable of being reduced by a silver halide developing agent at a rate slower than the reduction of image-wise developable silver halide of said silver halide hydrophilic colloid layer and in reduced state under alkaline conditions is capable of releasing a diffusible dye or dye precursor moiety, and

(2) applying an aqueous alkaline liquid to said photoexposed material effecting development in the presence of a developing agent and effecting with said liquid diffusion-transfer of said diffusible dye or dye precursor moiety to a receiving layer,

characterized in that said liquid contains triisopropanolamine.

4,353,976

NOVEL SILVER COMPLEXING AGENTS

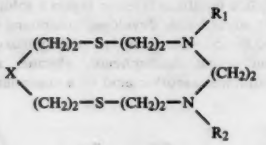
Stanley M. Bloom, deceased, late of Waban, Mass. (by Arlene N. Bloom, executrix), and Krishna G. Sachdev, Beacon, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 80,350, Oct. 1, 1979, Pat. No. 4,267,256. This application Oct. 30, 1980, Ser. No. 202,296

Int. Cl.³ G03C *5/54, 1/48*

U.S. Cl. 430—251 **9 Claims**

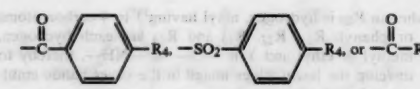
1. A photographic processing reagent comprising an aqueous alkaline solution containing a viscosity increasing polymer and at least one silver complexing compound which is represented by the formula



where

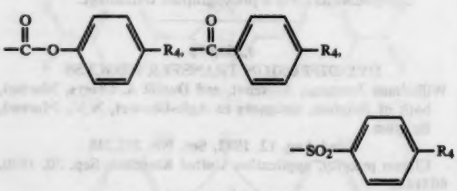
X is selected from the group consisting of oxygen, sulfur and $—NR_3$;

R_1 and R_2 are the same or diffferent and are H, alkyl, hydroxyalkyl, alkoxyalkyl,



wherein R_4 is H, alkyl, alkoxy or $—NO_2$ and R_5 is H, alkyl, alkoxy or alkoxyalkyl; and

R_3 is H, alkyl, hydroxyalkyl, alkoxyalkyl,



or $—CH_2—CH=CH—R_6$, wherein R_6 is H, alkyl, cyano or

wherein R_7 is H or alkyl.

4,353,977

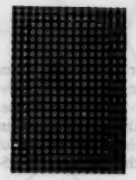
METHOD FOR FORMING A PHOTOSENSITIVE SILVER HALIDE ELEMENT

Arthur M. Gerber, Boston; Warren D. Slafer, Arlington, and Vivian K. Walworth, Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,639

Int. Cl.³ G03C *1/02, 1/90, 11/22*

U.S. Cl. 430—256 **51 Claims**



1. A method for forming a photosensitive element comprising a support carrying photosensitive silver halide grains in a predetermined spaced array which comprises at least partially coalescing fine-grain silver halide in a plurality of depressions in a hydrophobic layer, superposing a hydrophilic layer and said hydrophobic layer, and thereafter separating said hydrophilic layer from said hydrophobic layer, whereby silver halide grains are retained on said hydrophilic layer in a pattern corresponding substantially to the pattern of said spaced depressions.

4,353,978

POLYMERIC BINDERS FOR AQUEOUS PROCESSABLE PHOTOPOLYMER COMPOSITIONS

Ernst Leberzammer, New Brunswick, and Leo Roos, New Shrewsbury, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 66,374, Aug. 14, 1979, Pat. No. 4,273,857, which is a continuation of Ser. No. 654,171, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 463,310, Apr. 23, 1974, abandoned. This application Jan. 16, 1981, Ser. No. 225,724

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—302 **9 Claims**

1. A process for forming a photoresist on a surface comprising:

(1) applying to a surface the surface of a photopolymerizable layer on a film support, said photopolymerizable layer formed from a photopolymerizable composition containing 0.1 to 10% by weight of an organic radiation-sensitive free radical-generating photoinitiator system, 7.5 to 35% by weight of a nongaseous ethylenically unsaturated compound capable of forming a high polymer by free radical-initiated chain addition polymerization, and 30 to 92.4% by weight of polymeric binder wherein the binder is comprised of a mixture of from 15 or 60% by weight each of two free acid containing polymers which are insoluble in water at 85° F., the first polymer (A)

(a) being film forming when cast from solution in volatile solvent onto copper after evaporation of the solvent, the film having (1) the thickness of 0.0003 to 0.0023 inch; (2) good adhesion to copper as measured by zero delamination in the scribe cross hatch test; and (3) complete solubility within five minutes to a spray of dilute aqueous alkali at 0.04 normal NaOH, 20 p.s.i., and 80°–85° F.;

(b) having a molecular weight of at least 30,000; and

(c) having an acid number of at least 20; and the second polymer (B)

(1) having an acid number of at least 5; and

(2) when in film form of 0.0003 to 0.0023 inch thickness, being insoluble for at least 5 minutes to a spray of dilute aqueous alkali at 0.04 normal NaOH, 20 p.s.i., and 80°–85° F.; then, in either order,

(2) exposing the layer, imagewise, to actinic radiation to form a polymeric image; and

(3) stripping the film support;

(4) washing away the unexposed areas of the photopolymerizable layer to form a resist image of polymeric material with an alkaline, aqueous solution; and

(5) permanently modifying the adjacent areas on said surface which are unprotected by the resist image by using a reagent capable of etching said areas or depositing a material on said areas.

4,353,979

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Sadatugu Terada; Hideaki Arai, both of Hachioji; Kenji Itoh, Hino; Hiroshi Sugita, Hachioji; Katsumi Matsuura, Akigawa, and Thuneo Wada, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,423

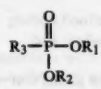
Claims priority, application Japan, Jul. 25, 1979, 54-95233

Int. Cl.³ G03C *7/00, 1/40*

U.S. Cl. 430—372 **8 Claims**

6. A process for incorporating an oil-soluble photographic additive into a hydrophilic colloidal solution for forming a photographic colloidal layer, comprising the steps of:

(a) dissolving the oil-soluble photographic additive in a high-boiling organic solvent having the general formula [I]:



[I]

wherein R_1, R_2 and R_3 each represents an aliphatic or aromatic group, and a carbon atom of R_3 is bonded directly to the phosphorus atom, to obtain a first solution; and

(b) thereafter incorporating said first solution into said hydrophilic colloidal solution.

4,353,980

PROCESS FOR THE PRODUCTION OF PROTECTIVE LAYERS FOR PHOTOGRAPHIC MATERIALS

Günter Helling, Cologne, and Karl Fuhr, Krefeld, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,332

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948420

Int. Cl.³ G03C *1/00*

U.S. Cl. 430—532 **9 Claims**

1. A process for the production of protective layers for photographic materials by applying and subsequently irradiating a coating composition which contains an acrylic compound and a photoinitiator and which is hardenable by irradiation with light from the ultra-violet region of the spectrum, characterized in that a coating composition comprising

(A) at least one reaction product of a polyisocyanate, a hydroxy acrylate a polyol containing thio or dithio groups and optionally a polyol,

(B) at least one acrylic monomer containing at least two acrylic ester groups and

(C) at least one photoinitiator, either with or without a compound accelerating the photoreaction

is applied to at least one side of the photographic material and subsequently irradiated.

4,353,981

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toru Noda, Tokyo; Yoshinobu Ichihashi, Kitakami, and Masashi Kubbota, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,619

Claims priority, application Japan, Sep. 12, 1979, 54/116912; Oct. 9, 1979, 54/130426

Int. Cl.³ G03C *1/86*

U.S. Cl. 430—536 **11 Claims**

1. A silver halide photographic material in which a photographic layer composed of at least one silver halide emulsion layer is provided on a substrate prepared by coating a base web principally composed of natural pulp with a film-forming resin, wherein the silver halide photographic emulsion layer is one which has been produced by incorporating at least one of the water soluble rhodium compounds or water soluble iridium compounds at the time of formation and dispersion or at the time of physical aging of the silver halide or the silver halide photographic emulsion layer contains a water soluble gold compound; the natural pulp or a mixture of two or more different types of natural pulp used for the base web of said substrate is one which has been produced by performing an additional bleaching treatment with a peroxide or a boron hydride compound in an alkaline state after the conventional pump bleaching treatment and has a PC number of 2.0 or less, said PC number being defined by the following formula:

$$P = 100\left\{\frac{(1-R)^2}{2R} - \frac{(1-R\omega)^2}{2R\omega}\right\}$$

wherein Ro=brightness (%)×(1)/(100) before the fading treatment, R=brightness (%)×1/100 after 18-hour fading treatment at 85° C. and 95% RH, and P is the post color (PC) number which indicates the degree (nondimensional number) of fading.

4,353,982

IMMUNOCHEMICAL ASSAY FOR CREATINE KINASE-MB ISOENZYME

Magdalena U. Gomez, Wayne, and Richard W. Wicks, Belleville, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 10, 1980, Ser. No. 139,042

Int. Cl.³ G01N *33/54;* C12Q *1/50;* G01T *1/00*

U.S. Cl. 435—7 **43 Claims**

1. A process for determining the amount of creatine kinase-MB isoenzyme in a biological fluid sample containing creatine kinase having subunit B or M or both, the process comprising:

(a) incubating the sample with

(i) a first antibody raised in a first animal species, the first antibody capable of immuno-reactively binding selectively one of the B or M subunits of the creatine kinase in the sample;

(ii) a second antibody raised in a second animal species, the second antibody capable of immunoreactively binding selectively as an immunoprecipitin with the first antibody; and

(iii) a third antibody raised in an animal species other than the first animal species and labeled with a measurable label, the third antibody capable of immunoreactively binding selectively with the other of said M or B subunits

to provide as a precipitate a mixture of immuno-complexes containing labeled third antibody-creatine kinase-MB isoenzyme-first antibody-second antibody and creatine kinase isoenzyme-first antibody-second antibody;

(b) isolating the precipitate containing the immunocomplexes;

(c) measuring the amount of label in the precipitate; and

(d) comparing the amount of measured label to a standard

curve thereby determining the amount of creatine kinase-MB isoenzyme in the biological fluid sample.

4,353,983

ANALYTICAL PROCESS AND MEANS FOR MEASURING THE AMOUNT OF HYDROGEN PEROXIDE IN AQUEOUS MEDIA AND OF ORGANIC SUBSTRATES GENERATING HYDROGEN PEROXIDE BY ENZYMATIC OXIDATION

Iqbal Siddiqi, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/EP79/00089, § 371 Date Jul. 15, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO80/01081, PCT Pub. Date May 29, 1980

PCT Filed Nov. 13, 1979, Ser. No. 205,325

Claims priority, application Switzerland, Nov. 15, 1978, 11718/78

Int. Cl.³ C12Q *1/60, 1/54, 1/28*

U.S. Cl. 435—11 **13 Claims**

1. A method of quantatively determining a constituent selected from the group which consists of hydrogen peroxide and peroxidase in an aqueous sample, said method comprising the steps of:

(a) mixing said sample with a reaction system selectively containing a known amount of peroxidase or hydrogen peroxide, respectively, and in excess of an organic fluorine compound in the form of a fluoroaniline, a fluoroanisole or a fluorophenol having at least one C—F bond cleaving on a peroxidase catalyzed oxidation by hydrogen peroxide whereby F^- ions are formed in the system;

(b) exposing the reaction system to an F^- selective electrode; and

(c) electrochemically measuring by said electrode the rate of formation of F^- ions liberated by the peroxidase catalyzed cleavage of said C—F bond.

4,353,984

COMPOSITION AND TEST PIECE FOR MEASURING GLUCOSE CONCENTRATION IN BODY FLUIDS

Shigeki Yamada, Jyoyo, and Takao Yamamoto, Kyoto, both of Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku, Kyoto, Japan

PCT No. PCT/JP80/00004, § 371 Date Sep. 2, 1980, § 102(e) Date Aug. 28, 1980, PCT Pub. No. WO80/01389, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 4, 1980, Ser. No. 205,367

Claims priority, application Japan, Dec. 31, 1978, 53-164968

Int. Cl.³ G01N *33/66, 33/52*

U.S. Cl. 435—14 **11 Claims**

1. A diagnostic composition which comprises a glucose oxidase, a peroxidase, a N,N'-tetramethyldiaminophenylmethane and guaiac.

9. A test piece comprising a substrate supporting a diagnostic composition which comprises a glucose oxidase, a peroxidase, guaiac and a N,N'-tetramethyldiaminophenylmethane.

4,353,985

PROCESS FOR THE PREPARATION OF 11 β-HYDROXY STEROIDS

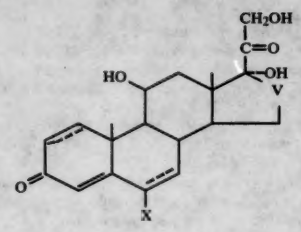
Karl Petzoldt; Klaus Annen; Henry Laurent, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 167,888

Int. Cl.³ C12P *33/08*

U.S. Cl. 435—59 **7 Claims**

1. A process for preparing an 11β-hydroxy steroid of the formula



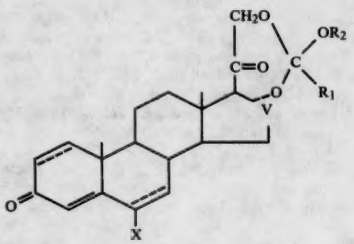
wherein

==== represents a single bond or a double bond;

X is hydrogen, fluorine, chlorine or methyl; and

V is methylene, ethylene, ethylidene or vinylidene;

which comprises fermenting an 11-deoxy steroid of the formula



wherein

===, X and V are as defined above;

R_1 is hydrogen or C_{1-6}-alkyl; and

R_2 is C_{1-6}-alkyl;

with a fungal culture of the genus Curvularia.

4,353,986

PROCESS FOR PRODUCING ANTIBIOTIC NANAOMYCIN E

Satoshi Omura, Tokyo; Haruo Tanaka, Machida; Itaru Takahashi, Kumamoto; Shinzo Ishii; Kazuyuki Mineura, both of Nagaizumi; Kunikatsu Shirahata, Machida, and Masaji Kasai, Fujisawa, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha and Kitasato Kenkyusho, both of Tokyo, Japan

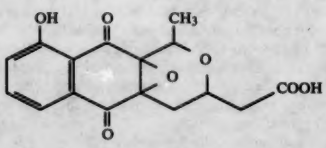
Division of Ser. No. 97,001, Nov. 23, 1979, Pat. No. 4,296,040, which is a continuation of Ser. No. 17,314, Mar. 5, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 276,432

Claims priority, application Japan, Mar. 7, 1978, 53-25041

Int. Cl.³ C12P *17/18, 17/06;* C12R *1/465*

U.S. Cl. 435—119 **4 Claims**

1. A process for producing a compound represented by the formula:



which comprises culturing the microorganism *Streptomyces rosa variant notoensis* in a medium under aerobic conditions to accumulate said compound in the fermented liquor and recovering same from the fermented liquor.

4,353,987

PROCESS FOR PREPARING GLYCERALDEHYDE FROM GLYCEROL WITH METHANOL DEHYDROGENASE

Holly J. Wolf, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 11, 1981, Ser. No. 272,625
Int. Cl.³ C12P *7/24*
U.S. Cl. 435—147 **9 Claims**

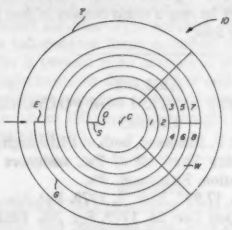
1. A process for preparing glyceraldehyde which comprises contacting glycerol with methanol dehydrogenase until a substantial amount of glyceraldehyde is produced, and recovering the glyceraldehyde.

4,353,988

GRID FOR USE IN COUNTING COLONIES OF BACTERIA PRESENT IN DISCRETE AREAS OF A SPIRAL DEPOSITION PATTERN

Nancy L. Couse, 2164 Zang St., Golden, Colo. 80401, and Jeannette W. King, 2620 S. Race, Denver, Colo. 80210

Filed Nov. 12, 1980, Ser. No. 206,048
Int. Cl.³ C12M *1/00*
U.S. Cl. 435—287 **15 Claims**



1. For use in combination with a spirally-deposited solution containing steadily decreasing concentrations of a chemical whose effect upon sensitive bacteria is to be analyzed, the improved means for counting the latter which comprises a transparent underlay imprinted with indicia defining a spiral grid pattern having a beginning point and an end point closely approximating those of the deposition spiral when superimposed thereupon, said grid having at least two convolutions defined in terms of the inner and outer marginal edges thereof and having a clear space therebetween, adjacent convolutions sharing a common marginal edge, the width of the convolutions being constant and spanning at least three convolutions of the deposition spiral, the rate at which said grid convolutions diverge radially from the starting point thereof being greater than the corresponding rate of the deposition spiral such that the convolutions of the former cut across the convolutions of the latter at least twice between the beginning and the end thereof, and at least a portion of the convolutions of said grid spiral being segmented to define a plurality of discrete areas within which the bacteria present can be counted.

4,353,989

CHEMICAL SYNTHESIS APPARATUS FOR PREPARATION OF POLYNUCLEOTIDES

Robert Bender, Toronto, and Peter D. Duck, Ottawa, both of Canada, assignors to ens Bio Logicals Inc., Toronto, Canada

Filed Jan. 19, 1981, Ser. No. 226,132
Int. Cl.³ C12M *1/00*
U.S. Cl. 435—287 **9 Claims**

1. Apparatus for the step-wise synthesis of polynucleotides by sequential feed of appropriate nucleotide and other reagents to a polymer-nucleoside solid complex for reaction therewith, the apparatus comprising:

a reaction column for receiving the solid complex and conducting reactions therewith;

a solvent receiving reservoir upstream of said column;

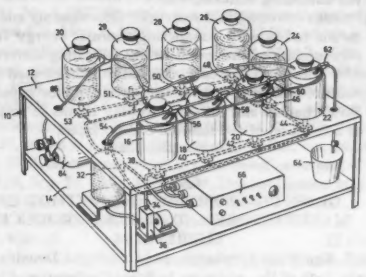
a fluid flow conduit extending from the solvent receiving reservoir to the reaction column;

a plurality of nucleotide reagent receiving reservoirs;

at least one reactant receiving reservoir;

a plurality of two-way valves serially arranged in said conduit, each one associated with the respective nucleotide reagent receiving reservoir or a respective reactant receiving reservoir;

each said valve having two exclusive and discreet flow paths



therethrough and being disposable in a first position in which its first flow path is utilized to provide fluid communication from its respective associated reservoir to said conduit, and in a second position in which its second flow path is utilized to provide for flow of fluid from another, upstream reservoir through the valve in the downstream direction, and each said valve being biased towards its second said position;

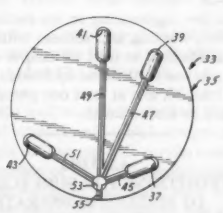
pumping means for delivery of solvent and reagents to the reaction column via said conduit, said pumping means being located downstream of the valves.

4,353,990

SANITATION INDICATOR

Wendell J. Manske, Birchwood, Minn., and Paul M. Hawkins, Burlington, Ky., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1981, Ser. No. 232,502
Int. Cl.³ C12M *1/00*; G01D *21/00*; G01K *11/00*; C12N *1/34*
U.S. Cl. 435—287 **17 Claims**



1. A device for monitoring and irreversibly displaying short term thermal energy input as a function of a selected time-temperature relationship, said device comprising, in combination:

(a) a dimensionally stable body member,

(b) at least one-fixed volume reservoir cavity, in said body means,

(c) a display means comprising a liquid-sorbent pad located remote from said reservoir cavity,

(d) a fixed-volume flow channel connecting each of said reservoir cavities and said display means, the dimensions

of said flow channel being such as to allow passage of said liquid therethrough,

(e) solid indicating material completely filling each of said reservoir cavities, said solid indicating material capable of changing to an expanded liquid phase at selected elevated temperatures, the volume of said indicating material being a function of temperature, the quantity of said indicating material in each flow cavity being sufficient to completely fill the reservoir cavity and connecting flow channel when in the liquid state,

(f) means for relieving pressure generated by expansion of the indicating material, and

(g) means covering said reservoir, flow channel and display means for rapidly conducting thermal energy from the surrounding environment to the indicating material,

whereby when said device is exposed to said selected elevated temperature said solid indicating material melts, expands into said flow channel and into said display means in response to and as a function of the thermal energy input.

4,353,991

GLASS COMPOSITION AND METHOD OF MANUFACTURE AND ARTICLE PRODUCED THEREFROM

John F. Van Ness, Pittsburgh, and G. Edward Donaldson, Gibsonia, both of Pa., assignors to Ferro Corporation, Cleveland, Ohio

Filed Apr. 13, 1981, Ser. No. 253,574
Int. Cl.³ C03C 7/00, 9/00
U.S. Cl. 501—20 25 Claims

1. In a vehicle-suspended, fritted glass enamel composition, adaptable to be applied to, and fired to fusion on, a vitreous substrate at a temperature from about 1000° F. to 1400° F., during which firing said vehicle is driven off, the improvement, in suspended, dispersed combination therewith, of a pigmenting amount of particulate, mica-based pearlescent pigment capable of retaining its pearlescent quality during and following said firing to fusion, so as to impart a pearlescent, translucent luster to the final, fused glass enamel.

4,353,992

PROCESS FOR THE REGENERATION OF A SORBENT

Wilhelmus Pannekeet, Haarlem, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 18, 1980, Ser. No. 217,576
Claims priority, application Netherlands, Dec. 28, 1979, 7909337
Int. Cl.³ B01J 49/00
U.S. Cl. 521—26 9 Claims

1. A process for regenerating an ion exchange resin sorbent which comprises washing said sorbent with an aqueous alkaline solution containing at least 20 meq/l. of an alkali metal hydroxide or alkaline earth metal hydroxide having an atomic number of at least 20, and at least one percent by weight of a monosaccharide or disaccharide.

4,353,993

FOAM COMPOSITIONS FOR SURFACE APPLICATION TO FIBROUS SUBSTRATES

Edward G. McCrossin, Portage, Mich., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 12, 1981, Ser. No. 262,864
Int. Cl.³ C08L 93/04
U.S. Cl. 521—65 10 Claims

1. In a composition suitable for surface application to a fibrous substrate, said composition being a foam produced by the aeration of an aqueous solution containing from 0.1 to 5 weight percent of a water-soluble salt of rosin or fortified rosin, the improvement wherein said aqueous solution has a pH of at least 8 and contains 0.02 to 5 weight percent of at least one water-soluble, amine-containing synthetic, addition or condensation type polymeric material compatible with said salt, the weight ratio of said salt to said polymeric material being within the range of 1:1 to 25:1.

4,353,994

LOW-DENSITY, FURFURYL BENZYLIC PHENOLIC THERMOSETTING FOAM PRODUCT AND METHOD OF PREPARING SAME

Stuart B. Smith, Conyers, Ga., assignor to Thermoset AG, Switzerland

Continuation-in-part of Ser. No. 238,467, Feb. 26, 1981. This application Dec. 14, 1981, Ser. No. 330,572
Int. Cl.³ C08J 9/14
U.S. Cl. 521—110 15 Claims

1. A method of preparing an ultralow-density thermosetting foam product composed substantially of closed cells and characterized by low friability, which method comprises: reacting a furfuryl compound, selected from the group consisting of a furfuryl-alcohol mnomer, a furfuryl-alcohol polymer or mixtures thereof, with a benzylic-ether phenolic-formaldehyde resole resin, the benzylic-ether resole resin having a mole ratio of formaldehyde to benzylic-ether phenol of from about 3:1 to 1:1, the reaction carried out in the presence of a sufficient amount of a blowing agent to form a low-density foam and a catalytic amount of a strong acid catalyst, to provide a thermosetting foam product having a foam density of less than about 0.5 pound per cubic foot.

4,353,995

NOVEL CATALYST SYSTEM FOR POLYURETHANE FOAMS

John F. Szabat; Gert F. Baumann, both of Pittsburgh, and Gaeta L. Copeland, Eighty Four, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 17,997, Mar. 7, 1979, Pat. No. 4,217,247. This application Dec. 26, 1979, Ser. No. 106,618
Int. Cl.³ C08G 18/14
U.S. Cl. 521—125 10 Claims

1. In a process for the production of an isocyanate addition product comprising reacting an organic isocyanate with an active hydrogen containing compound, the improvement wherein the reaction is conducted in the presence of a catalyst composition comprising

(a) a tertiary amine,

(b) a tin compound capable of catalyzing the reaction between an isocyanate group and an active hydrogen atom, and

(c) a compound of the formula:

$$(R—COO)_2Me$$

wherein Me represents calcium or barium, and R represents a hydrocarbon group.

4,353,996

BIO-COMPATIBLE POROUS FIBRES AND MATERIALS FOR OCCLUDING BIOLOGICALLY INTERESTING SUBSTANCES, AND METHOD FOR THEIR MANUFACTURE

Walter Marconi, San Donato Milanese; Francesco Bartoli, Rome; Franco Morisi, San Giovanni in Persiceto, and Francesco Pittalis, Rome, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 885,195, Mar. 10, 1978, abandoned. This application Sep. 23, 1980, Ser. No. 189,817
Claims priority, application Italy, Mar. 22, 1977, 21482 A/77
Int. Cl.³ A61K 31/74
U.S. Cl. 523—105 5 Claims

1. A bio-compatible synthetic fiber comprising a polymer selected from the group consisting of cellulosic polymers, esterified cellulosic polymers, etherified and nitrated cellulosic polymers, polyethylene, polyamides, vinyl chlorides, the polymers and copolymers of vinylidene chloride, styrene, vinylbu-

tyrate and gamma methylglutamate, polymers and copolymers of acrylonitrile, butadiene and isoprene, acrylates and methacrylates, and vinyl esters, said polymer having occluded therein a bio-compatible platelet-aggregation preventing agent selected from the group consisting of 4,5-diphenyl-2-bis(2-hydroxyethyl) amino oxazole, 4,8-dipiperidino-2,6-diethanolaminopyrimido-(5,4d)-pyrimidine dicumarol, and derivatives of salicyclic acid.

4,353,997

COMPOSITIONS BASED ON WATER-CURABLE, SILANE MODIFIED COPOLYMERS OF ALKYLENE-ALKYL ACRYLATES

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, and a continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Apr. 2, 1981, Ser. No. 250,444

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ C08K *3/10, 5/04, 5/16, 3/30*

U.S. Cl. 523—210 **29 Claims**

1. A water-curable composition comprising a water-curable, silane modified alkylene-alkyl acrylate copolymer, a mineral filler and a halogenated flame retardant additive wherein the mineral filler is present in an amount of about one to 100 percent by weight based on the weight of said copolymer and said halogenated flame retardant additive is present in an amount of about one to about 100 percent by weight based on the weight of said copolymer.

4,353,998

STRUCTURAL MATERIALS AND COMPONENTS

John Gagliani, and Raymond Lee, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 186,563, Sep. 12, 1980. This application Sep. 28, 1981, Ser. No. 306,363

Int. Cl.³ C08L *33/24*

U.S. Cl. 523—219 **19 Claims**

1. A process of making a blocking material or the like which comprises the steps of forming a polyimide precursor, blending glass microballoons with said precursor, and converting said precursor to a polyimide, said polyimide precursor containing three different primary diamines, one of said diamines being heterocyclic and having nitrogen in the ring, another of said diamines being a para- or meta-substituted aromatic diamine which is free of aliphatic moieties, the third of said diamines being aliphatic, and said precursor being prepared by dissolving the primary diamines and one or more tetracarboxylic acids or anhydrides thereof in essentially stoichiometric proportions in a lower alkyl alcohol or mixture of such alcohols.

4,353,999

PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATE-ORGANIC PLASTICS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 284,486, Jul. 17, 1981, Pat. No. 4,332,712, which is a continuation-in-part of Ser. No. 233,151, Feb. 10, 1981, Pat. No. 4,303,768, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 36,350, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Mar. 18, 1982, Ser. No. 359,609

Int. Cl.³ C08L *75/06;* **524** *3*

U.S. Cl. 524—3 **22 Claims**

1. The process for the production of polyurethane silicate product by the following steps:

(a) Mixing and reacting an aqueous alkali metal silicate solution in the amount of 100 parts by weight, a polymerable unsaturated organic compound in the amount of 5 to 100 parts by weight, a mono- or polycarboxylic acid compound in the amount of 1 to 10 parts by weight, an organic epoxide compound selected from the group consisting of ethylene oxide, propylene oxide, epichlorohydrin and mixtures thereof, in the amount of 1 to 50 parts by weight and a catalytic amount of an initiator, thereby

(b) producing an alkali metal silicate-organic plastic, then

(c) adding and reacting 50 to 200 parts by weight of an organic polyisocyanate or polyisothiocyanate, up to 10% by weight of a polyisocyanate initiator and up to 20% by weight of an emulsifier, percentage based on the weight of the reaction mixture, thereby

(d) producing a polyurethane silicate product.

4,354,000

RESILIENT PLASTIC WALL COATING FOR THE BUILDING INDUSTRY

Antonio Vecchiato, Treviso, Italy, assignor to Settef S.p.A., Treviso, Italy

Filed Apr. 2, 1981, Ser. No. 250,240

Claims priority, application Italy, Apr. 8, 1980, 85546 A/80

Int. Cl.³ C08K *5/05*

U.S. Cl. 524—388 **3 Claims**

1. A plastic elastic wall coating for the building industry for use on external and internal walls which comprises a paste of at least 15% by weight of thermoplastic acrylic resins in the form of an aqueous emulsion of 46–55% concentration, said paste additionally containing solid materials, said solid materials being inert siliceous materials, carbonates and inorganic pigments, at least 0.3% of synthetic or mineral fibers which are a member selected from the group consisting of fiberglass fibers, nylon fibers, acrylic fibers, polyvinyl chloride fibers, at least 0.3% of a water-repellant substance which is a wax or a silicone compound, at least 0.3% of an additive which is a member selected from the group consisting of bactericidal agents and fungicidal agents and at least 0.5% of an agent capable of causing the resin to set, which is ethylene glycol or propylene glycol or derivatives thereof, the amount of the said solid material being sufficient to obtain a semi-dense paste, said coating exhibiting high elasticity and resistance to changes in temperature and variations in climate.

4,354,001
RUBBER SLAB DIP

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 212,788, Dec. 4, 1980, Pat. No. 4,331,738. This application Dec. 21, 1981, Ser. No. 332,689

Int. Cl.³ C08L *13/02*

U.S. Cl. 524—501 **3 Claims**

1. An aqueous composition of matter comprising a blend of two polymeric latices containing a minor amount by weight of a heat sensitizer sufficient to gel said composition on heating, (A) the polymer of one of said latices of said composition comprising a carboxylated copolymer of (1) at least 45% by weight of a monomer selected from the group consisting of styrene, vinyl toluene, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methylmethacrylate and ethylmethacrylate and mixtures thereof, (2) a copolymerizable monomer selected from the group consisting of acrylic acid, methacrylic acid, ethacrylic acid, maleic acid, fumaric acid, itaconic acid, citraconic acid, sorbic acid and crotonic acid and mixtures thereof in an amount of up to 10% by weight and (3) the balance, in an amount sufficient to provide some flexibility to and for vulcanization of the copolymer, a copolymerizable monomer selected from the group consisting of butadiene-1,3, isoprene, 2,3-dimethyl-butadiene-1,3, and piperylene and mixtures thereof, said copolymer of (A) having a glass transition temperature of not less than about −30° C., and (B) the polymer of the other of said latices of said composition consisting essentially of a copolymer of (1) from about 50 to 70% by weight of at least one acrylate selected from the group consisting of methyl acrylate and ethyl acrylate. (2) from about 25 to 40% by weight of at least one alkacrylate selected from the group consisting of methyl methacrylate, ethyl methacrylate and methyl ethacrylate and (3) from about 3 to 7% by weight of acrylamide, said copolymer of (B) having a glass transition temperature of not less than about +30° C., the parts by weight ratio of the copolymer of (A) to the copolymer of (B) being from about 50:50 to 85:15 on a dry basis.

4,354,002
NOVEL ALIPHATIC SULFOSILOXANE-SILICATE COPOLYMERS

Pauls Davis, Gibraltar, and Joe C. Wilson, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 1, 1981, Ser. No. 249,916

Int. Cl.³ C08L *83/06*

U.S. Cl. 524—588 **4 Claims**

1. An aqueous composition containing a copolymer consisting essentially of 0.1 to 99.9 parts by weight of at least one group member derived from silicone sulfonates selected from the group consisting of aliphatic silicone sulfonates having the formula:

$$[MO_3SR-]_a-SiO_{\frac{4-a-b}{2}}^{R'_b}$$

wherein M is a monovalent, divalent or trivalent cation; R is a divalent aliphatic hydrocarbon radical; R′ is an alkyl radical of from 1 to 8 carbon atoms; a has an average value of from 1 to 3; b has an average value of from 0 to 2 and the total average value of a+b is from 1 to 3; and from 0.1 to 99.9 parts by weight of at least one silicate group derived from a water-soluble silicate represented by the formula:

$$[X_{1/d}O-]_e-SiO_{\frac{4-e}{2}}$$

wherein X is a cation that forms a water-soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium, and tetraorganoammonium cations; d is the valence of the cation represented by X and has a value of at least 1, and e has a value from 1 to 3 inclusive, said parts by weight of said groups in said copolymer being based upon 100 parts by weight of said copolymer.

4,354,003
SOLVENT DEWAXING WAXY HYDROCARBONS USING AN α-OLEFIN POLYMER-OLEFIN VINYL ACETATE COPOLYMER COMPOSITE DEWAXING AID

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa; Fumio Ohashi, and Tsutomu Naito, both of Oni, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 233,380, Feb. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 184,921, Sep. 8, 1980, abandoned, which is a continuation of Ser. No. 102,652, Dec. 12, 1979, abandoned, which is a continuation of Ser. No. 36,044, May 4, 1979, abandoned, which is a division of Ser. No. 926,811, Jul. 21, 1978, Pat. No. 4,192,733. This application Sep. 28, 1981, Ser. No. 305,919

Int. Cl.³ C08L *23/24, 23/08, 31/04*

U.S. Cl. 525—222 **1 Claim**

1. An improved dewaxing aid comprising a mixture of (A) an alpha-olefin homopolymer prepared from at least one alpha-olefin having from 10 to 25 carbon atoms or a copolymer made up of a monomer mixture comprising more than 50 wt.% of at least 2 C_{10} to C_{25} alpha-olefin monomers, said alpha olefin polymer having an average molecular weight of from between about 10,000 to 1,000,000, a molecular weight distribution exceeding the range of from about 10,000 to 1,000,000 but within the range of from about 2,000 to 3,000,000 and having a melt index greater than 1.8 g/10 min. and (B) an olefin-vinyl acetate copolymer having a vinyl acetate content of from about 15–40 wt.%, an average molecular weight of from about 50,000 to 1,000,000, a molecular weight distribution exceeding the range of from about 10,000 to 1,000,000 but within the range of from about 2,000 to 1,500,000, and a melt index greater than 2 g/10 minutes.

4,354,004
FILM COMPOSITIONS FROM OLEFIN POLYMER BLENDS

Patrick M. Hughes; Ananda M. Chatterjee, both of Houston, and Charles C. Hwo, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 28, 1981, Ser. No. 305,863

Int. Cl.³ C08L *23/20, 23/12, 23/06*

U.S. Cl. 525—240 **6 Claims**

1. A composition consisting essentially of an intimate blend of about 92 to 94% by weight of an isotactic butene-1-ethylene copolymer containing from about 0.5 to 10 mole percent ethylene, about 6 to 8% by weight of polypropylene, and about 0.02 to 1.5% by weight of high density polyethylene.

4,354,005
METHOD FOR CONTROLLING ADDUCT FORMATION IN PRODUCTION OF ACRYLONITRILE-BUTADIENE-STYRENE-ACRYLATE COPOLYMERS

Richard Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Oct. 9, 1981, Ser. No. 310,196

Int. Cl.³ C08F *257/02, 265/08*

U.S. Cl. 525—257 **47 Claims**

1. A process for producing an acrylonitrile-butadiene-styrene-acrylate copolymer comprising the steps of:

providing an aqueous suspension of styrene-acrylonitrile copolymer;

subjecting said suspension to a molecular-oxygen-containing gaseous atmosphere;

adding polymerization inhibitor containing acrylate monomer to said copolymer suspension;

replacing said molecular-oxygen-containing gaseous atmosphere with a substantially molecular-oxygen-free gaseous atmosphere;

adding a polymerization initator to the acrylate monomer containing copolymer suspension;

adding butadiene monomer to the arcylate monomer containing copolymer suspension; and

reacting the acrylate monomer and butadiene containing copolymer suspension to produce an acrylonitrile-butadiene-styrene-acrylate copolymer.

4,354,006

PROCESS FOR PRODUCING QUATERNARY AMMONIUM COMPOUNDS CONTAINING HALOHYDRIN FUNCTIONALITY

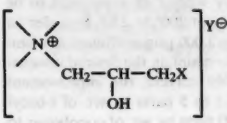
Ralph A. Bankert, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 30, 1980, Ser. No. 155,026

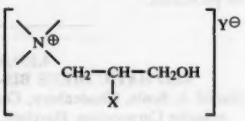
Int. Cl.³ C08F *8/18, 8/24*

U.S. Cl. 525—359.5 **8 Claims**

1. A process for producing a quaternary ammonium compound containing halohydrin functionality and having in its molecular structure at least one quaternary nitrogen group of the formula



or



where X and Y are halogen, which process comprises reacting an amino compound containing at least one tertiary amine group with at least one mole of allyl halide per mole of tertiary amine present in the amino compound to quaternize the tertiary amine group(s) and form allyl substituted quaternary ammonium halide group(s), and then reacting the resulting product with hypohalous acid until substantially all of the allyl substituents are converted to the corresponding halohydrin moieties.

4,354,007

PROCESS FOR PREPARING OXIDATIVELY-STABLE POLYMERS

Gerald Scott, 338 Station Rd., Knowle, Warwickshire, England

Division of Ser. No. 555,678, Mar. 5, 1975, Pat. No. 4,213,892. This application Jan. 14, 1980, Ser. No. 111,840

Claims priority, application United Kingdom, Mar. 6, 1974, 10086/74; Jul. 11, 1974, 30870/74

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ C08F *8/30, 8/42;* C08L *7/02*

U.S. Cl. 525—370 **25 Claims**

1. A process for preparing an oxidatively stable polymer which comprises reacting the polymer with an antioxidant selected from the group consisting of a chain-breaking antioxidant, a peroxide-decomposing antioxidant, an ultra-violet screening agent, a triplet quencher and a metal deactivator, said antioxidant rendering the polymer less susceptible to oxidative attack by chemically interrupting the autoxidation process by which the polymer is oxidatively degraded, the reaction between the polymer and the antioxidant being carried out in the presence of a free radical with the proviso that when the free radical is produced by a free radical generator, said generator produces free radicals at a temperature of 120° C. or below.

4,354,008

PRESSURE SENSITIVE, HOT MELT ADHESIVES

Martin M. Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 6, 1981, Ser. No. 260,968

Int. Cl.³ C08L *33/08*

U.S. Cl. 525—370 **14 Claims**

1. A pressure sensitive, hot melt adhesive composition, which possesses the reversible properties of strong cohesive strength at ambient temperature and desirable fluidity at hot melt application temperatures, said composition comprising the reaction product of:

(A.) a normally tacky random copolymer consisting essentially of:

(a.) at least 40% by weight of at least one monomer selected from the group consisting of C_2 to C_8 alkyl esters of acrylic or methacrylic acid and mixtures thereof; and

(b.) 0.5 to 10% by weight of a chelating comonomer selected from the group consisting of beta-hydroxypropyl acrylate or methacrylate esters of ortho-hydroxy aromatic acids and mixtures thereof; and

(c.) 0 to 59.5% by weight of a copolymerizable comonomer which does not adversely affect said reversible properties, said monomer percentages totaling 100% by weight; and

(B.) at least one chelatable metallic salt of a transition metal having a valence greater than 1 and a coordination number greater than 2 and an inorganic or organic anion capable of forming a volatile by-product at or below said application temperature, said metallic salt present in an amount sufficient to provide said reversible properties by forming one or more chelates with said chelating comonomer.

4,354,009

CATALYST COMPOSITION FOR COPOLYMERIZING ETHYLENE

George L. Goeke, Belle Mead; Burkhard E. Wagner, Highland Park, and Frederick J. Karol, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 30, 1981, Ser. No. 288,336

Int. Cl.³ C08F *2/34, 10/02*

U.S. Cl. 526—125 **22 Claims**

1. A continuous process for producing ethylene copolymers containing at least 90 mol percent of ethylene and no more than 10 mol percent of one or more alpha olefins containing from 3 to 8 carbon atoms, said copolymers being produced in granular form and having a density of from 0.91 g/cm³ to 0.96 g/cm³,

which comprises contacting a mixture of ethylene and at least one alpha olefin containing from 3 to 8 carbon atoms, at a temperature of from 30° C. to 115° C. and a pressure no greater than 1000 psi, in a gas phase reaction zone, with particles of a catalyst system comprising a precursor composition having the formula

$$Mg_mTi(OR)_nX_p[ED]_q$$

wherein

R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, or COR′ wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms,

X is selected from the group consisting of Cl, Br, I, and mixtures thereof,

ED is an organic electron donor compound selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

m is 0.5 to 56,
n is 0, 1 or 2,
p is 2 to 116, and
q is 2 to 85,
said precursor composition being diluted with an inert carrier material and treated with from 0.1 mol to 3.0 mols of a hydrocarbyl aluminum dihalide compound per mol of electron donor in said precursor composition,
said hydrocarbyl aluminum dihalide compound having the formula

$$RAlX_2$$

wherein
R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms or OR', wherein R' is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, and
X is selected from the group consisting of Cl, Br, I, and mixtures thereof,
and said precursor composition being completely activated with from 10 mols to 400 mols of activator compound per mol of such precursor composition, said activator compound having the formula

$$Al(R'')_dX'_eH_f$$

wherein X' is Cl or OR''', R'' and R''' are saturated hydrocarbon radicals containing from 1 to 14 carbon atoms, e is 0 to 1.5, f is 0 or 1, and d+e+f=3.

4,354,010

TRANSITION METAL COMPOUND

Alan B. Newton, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

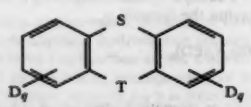
Continuation of Ser. No. 803,376, Jun. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,643, Apr. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 647,989, Jan. 9, 1976, abandoned. This application Sep. 24, 1980, Ser. No. 190,384

Claims priority, application United Kingdom, Jan. 9, 1975, 920/75; May 12, 1975, 19790/75; Oct. 29, 1975, 44634/75; May 7, 1976, 18786/76; Jun. 21, 1976, 25638/76; Jun. 21, 1976, 25639/76; Jun. 21, 1976, 25640/76

Int. Cl.³ C08F *4/64, 10/00*

U.S. Cl. 526—140 **32 Claims**

1. In a process of treating a transition metal compound in which a solid compound of a transition metal of Groups IVA to VIA of the Periodic Table is subjected to a grinding process in the presence of at least one sulphur-containing organic compound, the improvement which comprises effecting the grinding process in the presence of at least one sulphur-containing organic compound which is a sulphide compound of the formula



where
D or each D, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group —NRR';
T is —S—, —O—, or —CO—;
R is a hydrogen atom or a hydrocarbyl group;
R' is a hydrocarbyl group; and
each q is, independently, an integer from 0 up to 4.

4,354,011

COPOLYMERS OF ETHYLENE AND ETHYLENICALLY UNSATURATED MONOMERS, PROCESS FOR THEIR PREPARATION AND DISTILLATE OIL CONTAINING SAID COPOLYMERS

Stephen Ilnyckyj, Kennington, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 947,813, Oct. 2, 1978, Pat. No. 4,230,811, which is a continuation of Ser. No. 461,621, Apr. 17, 1974, abandoned. This application Aug. 7, 1980, Ser. No. 176,209 The portion of the term of this patent subsequent to May 11, 1995, has been disclaimed.

Int. Cl.³ C08F *4/28, 110/02, 218/02*

U.S. Cl. 526—227 **3 Claims**

1. In a method of preparing an oil-soluble copolymer of ethylene and vinyl acetate useful as a middle distillate fuel oil flow improver for depressing the pour point of said oil and limiting the size of wax crystals that form on cooling said oil below its cloud point, by free radical initiation, wherein said copolymer has a number average molecular weight by Vapor Phase Osmometry in the range of 1,000 to 5,000 and consists essentially of about 3 to 20 molar proportions of ethylene per molar proportion of vinyl acetate, which method comprises copolymerizing said monomers in a liquid phase reaction in about 100 to 600 parts by weight of C_5 to C_{10} hydrocarbon solvent based upon 100 parts by weight of copolymer to be produced, at a temperature of about 200° to 270° F. under an ethylene pressure of about 700 to 3,000 psig. sufficient to maintain a liquid phase medium and to maintain the desired concentration of ethylene solution in the solvent, the improvement which comprises using about 0.1 to 5 parts by wt. of t-butyl peroxyacetate as initiator per 100 parts by wt. of copolymer to be produced.

4,354,012

ALIPHATIC DIENE BIS-IMIDE POLYMERS

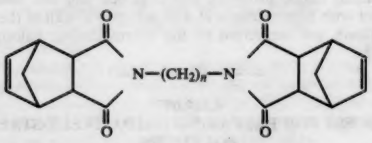
Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 12, 1981, Ser. No. 273,139

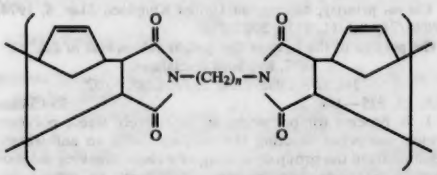
Int. Cl.³ C08F *26/06*

U.S. Cl. 526—259 **2 Claims**

1. A moisture resistant polyimide adhesive formed by polymerizing monomers of the formula:



to form a polymer with repeating units



where n is aobut 8 to about 20, and the polymer has a room temperature water immersion moisture absorption rate less than about 0.6% by weight for 24 hours and a tensile lap shear strength greater than about 1800 psi (1.24×10^7 NT/M^2), such properties imparted to the polymer with curing for less than about one hour.

4,354,013

PROCESS FOR PREPARING EPOXY-MODIFIED SILICONE RESINS

Hiroshi Kimura, Oota, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 224,973

Claims priority, application Japan, Jan. 22, 1980, 55-5314

Int. Cl.³ C08L *83/04*; C08G *77/08, 77/40*

U.S. Cl. 528—16 11 Claims

1. A process for preparing an epoxy-modified silicone resin which comprises reacting

(A) an organosilicon material containing substantially no hydroxyl groups directly bonded to silicon and having the formula:

$$R^1_aSi(OR^2)_bO_{(4-a-b)/2}$$

in which R^1 and R^2 are substituted or unsubstituted monovalent hydrocarbon groups, and a and b are in the ranges of $0 \leqq a < 3$, $0.001 \leqq b \leqq 4$, and $a+b \leqq 4$,

with

(B) an epoxy compound containing at least one epoxy group and at least one hydroxyl group in a molecule,

in the presence of

(C) a catalytically effective amount of a chelate compound selected from the group consisting of aluminum chelates and zirconium chelates, under conditions effective to cause dealcoholation condensation reaction between the hydroxyl group of said epoxy compound and the OR^2 groups of said organosilicon material.

4,354,014

POWDERED COATING COMPOSITIONS HAVING GOOD STORAGE STABILITY AND PRODUCTION OF SAME

Elmar Wolf, and Rainer Gras, both of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,205

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929150

Int. Cl.³ C08G *18/80*

U.S. Cl. 528—45 6 Claims

1. Powdered coating compositions having good storage stability and particle size smaller than 0.25 mm, comprising the reaction product of polyesters which contain hydroxyl groups and melt between 40°–120° C., and ε-caprolactam partially blocked isophorondiisocyanate adducts, and catalysts, if necessary, and customary additives, wherein said isophoronediisocyanate adducts partially blocked with ε-caprolactam contain 0.1 to 1 mole of free NCO-groups per mole of adduct and are selected from the group consisting

adduct containing urea groups and having an NCO-content of 22–35% weight;

adduct containing biuret groups and having an NCO-content of 20–35% by weight;

adduct containing carbodiimide groups and having an NCO-content of 22–35% by weight and an adduct which contains urea and urethane groups and which comprises the reaction product of isophoronediisocyanate and 1-hydroxy-3-aminomethyl-3,5,5-trimethylcyclohexane.

4,354,015

PHOSPHONIUM BICARBONATE CATALYSTS FOR PROMOTING REACTION OF EPOXIDES WITH PHENOLS

George A. Doorakian, Bedford; Lawrence G. Duquette, Maynard, both of Mass., and James L. Bertram, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 231,704, Feb. 5, 1981, abandoned, which is a continuation of Ser. No. 63,894, Aug. 3, 1979, abandoned. This application Oct. 21, 1981, Ser. No. 313,430

Int. Cl.³ C08G *59/68*

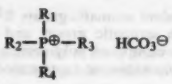
U.S. Cl. 528—89 13 Claims

1. In the process of preparing an epoxy resin by reacting

(a) a compound bearing an average of more than one vicinal epoxide group per molecule with

(b) a polyhydric phenol,

the improvement comprising conducting the reaction in the presence of a compound represented by the formula I



(I)

or a derivative thereof formed in situ, wherein R_1–R_4 are each independently hydrocarbyl or inertly-substituted hydrocarbyl having up to 20 carbon atoms, the compound of formula I being present in an amount effective to prepare a resin having a weight average molecular weight at least 25 percent greater than that obtained with a like molar quantity of a $R_1R_2R_3R_4P^{\oplus}$ acetate salt or acetate/acetic acid complex under otherwise identical reaction conditions.

4,354,016

METHOD OF PREPARING POLYESTERS MODIFIED WITH TRIHYDROXYBENZOPHENONE

Robert B. Rashbrook, Hatfield, and Patrick J. Horner, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

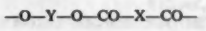
Filed Nov. 28, 1980, Ser. No. 210,756

Claims priority, application United Kingdom, Dec. 10, 1979, 7942482

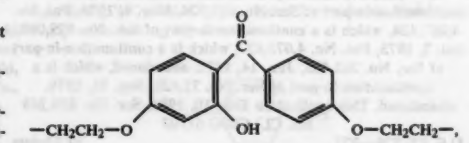
Int. Cl.³ C08G *63/66*

U.S. Cl. 528—128 1 Claim

1. A method of making a linear polyester which has as its repeating unit:



wherein at least 80 mole % of the X groups represent p-phenylene and the remainder represent m-phenylene and at least 90% of the Y groups represent $-CH_2CH_2-$ and at least 0.1% of the Y groups represent esterification residues of the formula



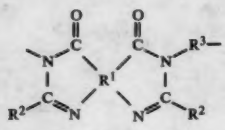
said method comprising polycondensing a glycol terephthalate precursor in the presence of 2,4,4′-trihydroxybenzophenone.

4,354,017
PROCESS FOR THE PRODUCTION OF POLYQUINAZOLONE-BASED POLYMERS

Masao Abe; Hisashi Ichinose, and Yuzuru Noda, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

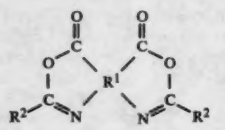
Filed Jun. 25, 1981, Ser. No. 277,429
Claims priority, application Japan, Jun. 26, 1980, 55/86794
Int. Cl.³ C08G *69/40, 69/12*
U.S. Cl. 528—172 16 Claims

1. A process for producing a polyquinazolone-based polymer having, as a repeating unit, a bisquinazolone unit represented by formula (IIIa):



(IIIa)

wherein R^1 is a tetravalent aromatic group; R^2 is independently an alkyl group or an aromatic group; and R^3 is a divalent organic group; which comprises polymerizing nearly equimolar amounts of (a) a bisoxazinone represented by formula (I):



(I)

wherein R^1 and R^2 are the same as described above, and (b) a diamine represented by formula (IIa):

$$H_2N—R^3—NH_2 \quad \text{(IIa)}$$

wherein R^3 is the same as described above, in an aprotic polar organic solvent in the presence of a Lewis acid catalyst.

4,354,018
POLYESTERS OF 3-(PARA-HYDROXYPHENYL)PROPIONIC ACID

Hans-G. Elias, Midland, Mich., and Robert J. Warner, Racine, Wis., assignors to Michigan Molecular Institute, Midland, Mich.

Filed Feb. 1, 1982, Ser. No. 344,548
Int. Cl.³ C08G *63/06, 65/38*
U.S. Cl. 528—206 8 Claims

1. Resinous linear poly(oxy-1,4-phenylene-3-oxotrimethylene).

4,354,019
PROCESS FOR THE PRODUCTION OF ORGANIC ALKALI METAL SILICATE COMPOUNDS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 251,132, Apr. 6, 1981, Pat. No. 4,321,184, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,073,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Dec. 10, 1981, Ser. No. 329,283
Int. Cl.³ C08G *63/02*
U.S. Cl. 528—272 11 Claims

1. The process for the production of polyester alkali metal silicate compounds by the following steps:

(a) mixing and reacting oxidated silicon compound selected from the group consisting of hydrated silica, sodium silicate, patassium silicate, natural oxidated silicon compounds containing free silicic acid radicals and mixtures thereof, alkali metal compound selected from the group consisting of alkiali metal hydroxides selected from the group consisting of sodium hydroxide, potassium hydroxides, alkali metal carbonates selected from the group consisting of sodium carbonate, potassium and mixtures thereof in an aqueous solution and an organic compound which is attached to a substituent which will split off during the reaction is a substituted hydrocarbon which contains a substituent selected from the group consisting of halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, formate, acetate, propionate, laurate, oleate, sterate, oxalate, acid malonate, acid tartrate, acid citrate and mixtures thereof thereby producing an organic metal silicate compound, then

(b) admixing 50 to 100 parts by weight of the organic alkali metal silicate compound with 50 to 100 parts by weight of an organic polycarboxylic acid compound and 50 to 100 parts by weight of an organic polyhydroxy compound and reacting the mixture thereby

(c) producing a polyester alkali metal silicate resinous product.

4,354,020
CONTINUOUS PREPARATION OF POLYCAPROLACTAM IN VERTICAL TUBULAR REACTOR

Rudi-Heinz Rotzoll, Limburgerhof; Paul Matthies, Heidelberg; Guenter Valentin, and Werner Hoerauf, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,591
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918828
Int. Cl.³ C08G *69/16*
U.S. Cl. 528—323 1 Claim

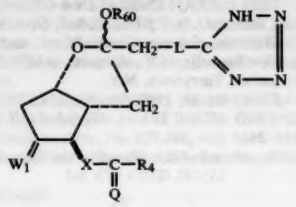
1. A process for the continuous preparation of polycaprolactam which comprises: passing ϵ-caprolactam and an initiating amount of water downwardly through a vertical tubular reactor, wherein the ϵ-caprolactam is partially polymerized with mechanical mixing at a temperature of from 245° to 260° C. in an upper mixing zone of the tubular reactor, said mixing zone being equipped with a mechanical stirrer and having a diameter which is 30 to 80% greater than that of the balance of the tubular reactor, circulating the partially polymerized caprolactam in melt form through a heat exchange zone located at a distance below the stirrer which is 0.3 to 1.5 times the diameter of said balance of the tubular reactor, in a lower part of the mixing zone, passing the melt through at least one additional heat exchange zone at a temperature of from 240° to 290° C., wherein the desired degree of polymerization is reached, and thereafter discharging poly-ϵ-caprolactam as a melt from the reactor tube.

4,354,021
2-DECARBOXY-2-TETRAZOLYL-6-ALKOXY-PGI$_1$ COMPOUNDS

Frank H. Lincoln, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 892,108, Mar. 31, 1978, Pat. No. 4,207,402. This application Aug. 30, 1979, Ser. No. 70,952
Int. Cl.³ C07D *405/06, 405/12*
U.S. Cl. 542—431 1 Claim

1. A compound of the formula



wherein L is
(1) $-(CH_2)_d-C(R_2)_2-$,
(2) $-CH_2-O-CH_2-Y-$, or
$-CH_2CH=CH-$,
wherein d is zero to 5, R_2 is hydrogen, methyl or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$, or $-(CH_2)_2-$;
wherein
Q is oxo, α—H:β—H, α—R_8:β—OH, or α—OH:β—R_8, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein R_4 is
(1) $-C(R_5)(R_6)-C_gH_{2g}-CH_3$,
(2) $-C(R_5)(R_6)-Z-(Ph)$, or
(3) cis—$CH_2-CH=CH-CH_2CH_3$,
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6- and the (Ph);
wherein (Ph) is phenyl or phenyl substituent by (T)s,
wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;
wherein W_1 is α—OH:β—H, α—H:β—OH, oxo, methylene, α—H:β—H, or α—CH_2OH:β—H;
wherein R_{60} is straight-chain alkyl of one to 6 carbon atoms, inclusive; and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

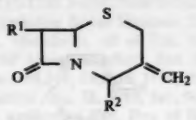
4,354,022

PROCESS FOR PREPARING 3-METHYLENECEPHAM COMPOUNDS OR A SALT THEREOF

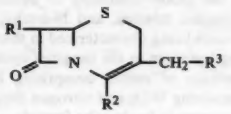
Takao Takaya, Kawanishi; Takashi Masugi, Ikeda; Toshiyuki Chiba, Osaka; Akiteru Yoshioka, Kyoto; Masayuki Kato, Mino; Ikuo Ueda, Toyonaka, and Masakazu Kobayashi, Ikeda, all of JPX, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 5, 1981, Ser. No. 270,876
Int. Cl.³ C07D *501/04*
U.S. Cl. 544—28 **8 Claims**

1. A new process for preparing 3-methylenecepham compounds of the formula:



wherein
R^1 is amino or a protected amino group, and
R^2 is a carboxy or a protected carboxy group, or a salt thereof,
which comprises reducing a compound of the formula:



wherein
R^1 and R^2 are each as defined above, and
R^3 is halogen or heterocyclicthio which may have suitable substituent(s), or a salt thereof, with a combination of a metal selected from the group consisting of zinc, tin and iron, and an ammonium salt of an acid selected from the group consisting of ammonium halide, ammonium carbonate and ammonium acetate.

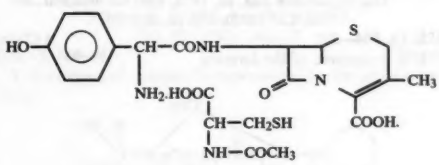
4,354,023

CEFADROXIL ACETYLCYSTEINATE SALT

Marco Falciani, and Renato Broggi, both of Milan, Italy, assignors to Dobfar S.p.A., Milan, Italy

Filed Mar. 4, 1981, Ser. No. 240,310
Int. Cl.³ C07D *501/22*
U.S. Cl. 544—030 **1 Claim**

1. Cefadroxil salt which is cefadroxil acetylcysteinate having formula:



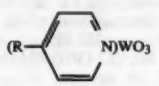
4,354,024

TUNGSTEN TRIOXIDE LAYERED COMPOUNDS

Jack W. Johnson, Fanwood, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

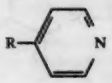
Filed Nov. 10, 1982, Ser. No. 205,104
Int. Cl.³ C07F *11/00*
U.S. Cl. 544—181 **9 Claims**

1. A composition of matter comprising layered compounds containing WO_3 and nitrogen donor Lewis bases, said layered compounds having the formula



wherein R is hydrogen; halogen; C_1–C_{20} aliphatic hydrocarbon; C_6–C_{10} aryl; C_7–C_{20} aralkyl; OR′ or SR′ where R′ is

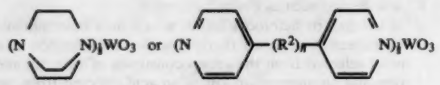
C_1–C_6 alkyl, the layered compounds being characterized in that



is covalently bound to a tungsten atom in the tungsten oxide layer.

2. A composition of matter comprising layered compounds containing WO_3 and nitrogen donor Lewis bases, said compounds having the formula LWO_3 where L is a Lewis base selected from the group consisting of pyridine, pyridazine, pyrimidine, pyrazine, triazine, and N-methyl imidazole, the layered compounds being characterized in that L is covalently bound to a tungsten atom in the tungsten oxide layer.

3. A composition of matter comprising bridged layered compounds containing WO_3 and nitrogen donor Lewis bases, said layered compounds having the formula



where n is 0 or 1 and R^2 is methylene or alkylene, alkenylene or alkynylene of 2–6 carbon atoms; C_6–C_{10} arylene; C_7–C_{14} aralkylene; oxygen or sulfur, the bridged layered compounds being characterized in that the nitrogen donor Lewis base is covalently bound to tungsten atoms in separate tungsten oxide layers.

4,354,025

N,N'-DISUBSTITUTED HEXAHYDROPYRIMIDINES

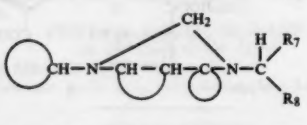
Neil E. S. Thompson, Creve Coeur, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 815,886, Jul. 15, 1977, Pat. No. 4,129,597. This application Jun. 16, 1978, Ser. No. 916,390

Int. Cl.³ C07D *235/02, 235/06*

U.S. Cl. 544—231 **4 Claims**

1. A compound of the formula



where R_7 is alkyl and R_8 is hydrogen or alkyl and where together with the carbon or carbon atoms to which it is shown attached indicates a cyclopentyl or cyclohexyl cycloalkyl ring or such a cycloalkyl ring substituted by alkyl, halo, alkoxy or phenyl.

4,354,026

3-CHLORO-6-(PYRIDINYL)-PYRIDAZINES

George Y. Lesher, Schodack, and William B. Dickinson, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 173,004, Jul. 28, 1980, Pat. No. 4,304,775, which is a continuation-in-part of Ser. No. 103,192, Dec. 13, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,229

Int. Cl.³ C07D *401/04*

U.S. Cl. 544—238 **2 Claims**

1. 3-Chloro-6-PY-pyridazine or pharmaceutically-acceptable acid-addition salt thereof, where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

4,354,027

TRIAZOLOQUINOXALIN-4-ONES

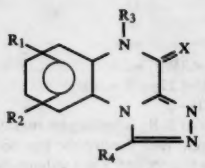
Bernard Loev, Scarsdale, N.Y.; John T. Suh, Greenwich, Conn.; Bruce E. Williams, Cottage Grove, Minn., and Vassil St. Georgiev, New Rochelle, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed May 19, 1980, Ser. No. 151,220

Int. Cl.³ C07D *487/04, 241/44, 491/14;* A61K *31/495*

U.S. Cl. 544—346 **7 Claims**

1. An anti-hypertensive compound of the formula



wherein

X is S or O;

each of R_1 and R_2 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, sulfonamido, halogen, alkoxy, alkenyloxy, alkynyloxy, cyano, hydroxy, nitro, amino, alkylamino, alkanoylamino, carbalkoxyamino, methanesulfonyl, carboxy, carbalkoxy or trihalomethyl, or taken together, methylenedioxy, with the proviso that at least one of R_1 and R_2 is other than H;

R_3 is hydrogen, alkyl, alkenyl, alkynyl, aryl, aralkyl, cycloalkyl or cycloalkyl-CH_2-;

R_4 is hydrogen, alkyl, alkenyl, alkynyl, aryl, aralkyl, cycloalkyl, cycloalkyl-CH_2-, alkanoyl, or carbalkoxy;

wherein the hydrocarbyl groups of R_1, R_2, R_3 and R_4 independently contain up to 7 carbon atoms when aliphatic and up to 10 carbon atoms when cycloalkyl or aromatic; and pharmaceutically acceptable acid addition salts thereof.

4,354,028

PIPERAZINE DERIVATIVES

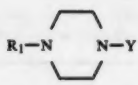
John Martin, Carmel, Ind.; George A. Doorakian, Bedford, and Lawrence G. Duquette, Maynard, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 114,022, Jan. 21, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,635

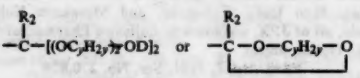
Int. Cl.³ C07D *405/04*

U.S. Cl. 544—374 **4 Claims**

1. A compound represented by the formula



where R_1 is hydrogen, C_{1-4} alkyl or hydroxyalkyl, or the radical Y; and Y independently each occurrence is selected from:



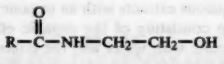
where R_2 is hydrogen or methyl, D is hydrogen or C_{1-4} alkyl, y independently each occurrence is 2, 3 or 4 and z is 0, 1, 2, 3 or 4.

4,354,029
PREPARATION OF 2-SUBSTITUTED-2-OXAZOLINES WITH ORGANIC ZINC SALT CATALYSTS

Mark E. Kaiser, Midland, Mich., and David L. Larson, Cookeville, Tenn., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 966,696, Dec. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 758,279, Jan. 10, 1977, abandoned, and Ser. No. 875,280, Feb. 6, 1978, abandoned.
This application Nov. 30, 1981, Ser. No. 325,948
Int. Cl.³ C07D *263/12*
U.S. Cl. 548—239 8 Claims

1. A cyclodehydration process for making a 2-substituted-2-oxazoline comprising reacting by contacting in liquid phase a N-(2-hydroxyalkyl)carboxamide corresponding to the formula



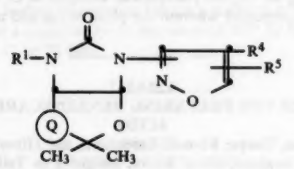
wherein R is alkyl of 1 to about 17 carbon atoms or phenyl, or a carboxylic acid/amine salt precursor of said N-(2-hydroxyalkyl)carboxamide with a small but catalytic amount of an organic zinc salt.

4,354,030
ISOXAZOLYLIMIDAZOLIDINONE HERBICIDES

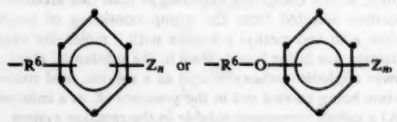
Kenneth W. Burow, Jr., Indianapolis, and Roger L. St. Clair, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 24, 1981, Ser. No. 334,410
Int. Cl.³ C07D *491/056, 491/22;* A01N *43/50*
U.S. Cl. 548—247 7 Claims

1. A compound of the formula:



wherein:
R^1 is C_1–C_6 alkyl or allyl;
R^4 is hydrogen, C_1–C_6 alkyl, halo, cyano or nitro;
R^5 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_7 cycloalkyl, C_1–C_3 alkyl-C_3–C_7 cycloalkyl, halo-C_1–C_6 alkyl, $—R^6—O—R^7$ or $—R^6—S—R^7$,
where
R^6 is C_1–C_6 alkylene and
R^7 is C_1–C_6 alkyl, or R^5 is:



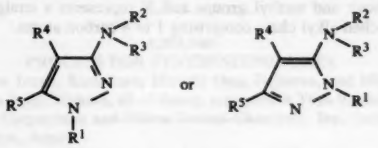
wherein:
Z is nitro, halo, or R^7, and n is 0, 1, 2 or 3 provided that no more than two substituents shall be nitro.

4,354,031
SUBSTITUTED 3-AMINOPYRAZOLES

Peter Plath, Ludwigshafen; Bruno Wuerzer, Limburgerhof, and Wolfgang Rohr, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Atiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 951,566, Oct. 16, 1978, Pat. No. 4,260,775.
This application Aug. 25, 1980, Ser. No. 180,949
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747531
Int. Cl.³ C07D *231/38*
U.S. Cl. 548—362 1 Claim

1. A pyrazole of the formula



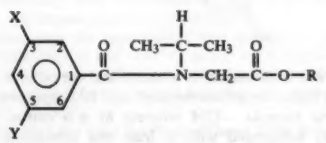
where
R^1 is phenoxycarbonyl, lower alkanoyl substituted by halogen or methoxy or lower alkanoyl,
R^2 is hydrogen or lower alkyl,
R^3 is n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, 3-methyl-2-butyl, pentyl-2 or pentyl-3 or one of said groups substituted by lower alkoxy or is a 5-,6-, or 7-membered cycloalkyl,
R^4 is methoxycarbonyl, and
R^5 is hydrogen or methyl, and the agriculturally acceptable acid addition salts thereof.

4,354,032
ALKYL N-3-HALO-,N-3,5-DIHALOBENZOYL-N-ISOPROPYLAMINOACETATE HERBICIDES

Walker A. Strong, Hudson, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 7, 1978, Ser. No. 931,705
Int. Cl.³ C07C *101/10*
U.S. Cl. 560—41 8 Claims

1. A compound graphically represented by the general formula:



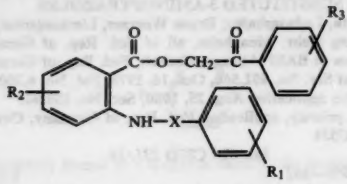
wherein:
X is chlorine, or bromine;
Y is hydrogen, chlorine, or bromine; and
R is an alkyl of up to four carbon atoms.

4,354,033
ANTHRANILIC ACID ESTERS

Nanduri Bhanumati, and Prahad B. Sattur, both of Hyderabad, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Aug. 31, 1981, Ser. No. 298,247
Int. Cl.³ C07C *101/54;* A61K *31/245*
U.S. Cl. 560—48 4 Claims

1. Anthranilic acid esters having the general formula:



(I)

in which R_1, R_2 and R_3 represent any of hydrogen, chlorine, methoxy and methyl groups and X represents a straight or branched alkyl chain comprising 1 to 4 carbon atoms.

4,354,034

DIHALOPHENOXYPROPIONIC ACIDS AND THEIR DERIVATIVES, AND THEIR USE AS COTTON DESICCANTS

John E. Barton, Wokingham; David J. Collins, Crowthorne, and Donald W. Headford, Reading, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 15, 1979, Ser. No. 48,771

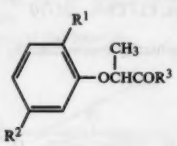
Claims priority, application United Kingdom, Jun. 30, 1978, 28420/78

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.³ C07C *69/76*

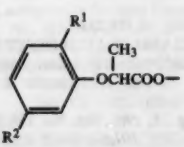
U.S. Cl. 560—62 **1 Claim**

1. A method of desiccating growing cotton plants, the method consisting essentially of the step of applying to the foliage of the plants, a cotton desiccating amount of a compound of general formula (II)



(II)

wherein one of R^1 and R^2 is bromine and the other is chlorine, bromine, iodine or trifluoromethyl; and R^3 is hydroxy; a group of general formula —OM wherein M is a cation; phenoxy optionally substituted with at least one substituent selected from the class consisting of halogen and C_{1-4} alkyl; C_{3-6} cycloalkoxy; C_{1-12} alkoxy optionally substituted with at least one substituent selected from the class consisting of chlorine, hydroxy, C_{1-4} alkoxy, di-(C_{1-4}alkyl)-amino, optionally chloro-, phenoxy- or methyl-substituted phenyl and a group of general formula (III):



(III)

wherein R^1 and R^2 are as defined above or C_{3-12} alkenyloxy.

4,354,035

PROCESS FOR ISOLATING ROSMARINIC ACID FROM PLANTS

Bruno Christ, Cologne, and Kurt Kesselring, Köttingen, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,657

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010040

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—75 **3 Claims**

1. Process for the isolation or rosmarinic acid from plants comprising starting from plants or parts of the plants of balmmint (*Melissa officinalis*), extracting the crushed plants or parts of the plants one to three times with 20 to 30 times the amount of water at 80° to 100° C. for 30 to 60 minutes with stirring, acidifying the extract of a pH of 2 to 2.5, thereafter extracting the acidified aqueous extracts with an organic solvent selected from the group consisting of the organic ethers, the higher alkanols immiscible with water and the esters of the aliphatic carboxylic acids, separating the solvent by evaporation, stirring the residue with water at 40° to 80° C. for 20 to 40 minutes, purifying the resulting solution and separating crystalline rosmarinic acid by reducing the volume of the solution and storing the solution at 2° to 8° C.

4,354,036

PREPARATION OF CARBOXYLIC ACID ESTERS

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 219,786, Dec. 24, 1980. This application May 28, 1981, Ser. No. 267,974

Int. Cl.³ C07C *67/38*

U.S. Cl. 560—233 **4 Claims**

1. In a process for the preparation of a carboxylic acid ester by reacting an olefin with carbon monoxide in the presence of an alcohol, the improvement which comprises carrying out said reaction in the presence of a catalyst comprising a molybdenum-nickel or a tungsten-nickel co-catalyst component, in the presence of a halide and in the presence of a promoter comprising an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and nitrogen are trivalent.

4,354,037

PROCESS FOR PREPARING BENZENECARBOXYLIC ACIDS

Isao Hirose, Tokyo; Kiyoshi Yamamoto, and Hiroyuki Okitsu, both of Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 164,674, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 18,030, Mar. 6, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 346,775

Claims priority, application Japan, Mar. 7, 1978, 53/24932

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—416 **18 Claims**

1. A process for preparing an oxidation reaction mixture containing benzenecarboxylic acids, the content of the resulting terephthalic acid in said reaction mixture not exceeding 45% by weight, based on the total weight of the reaction mixture, which comprises oxidizing at least one aromatic hydrocarbon selected from the group consisting of p-xylene, p-toluic acid and methyl p-toluate with a molecular oxygen-containing gas in the liquid phase in the substantial absence of a lower aliphatic carboxylic acid as a solvent, said oxidation reaction being carried out in the presence of, as a catalyst,

(A) a cobalt compound soluble in the reaction system

(B) a manganese compound soluble in the reaction system, and

(C) a bromine compound soluble in the reaction system;

wherein the cobalt compound (A) and the manganese

compound (B) are present in such a ratio and a concentration, calculated as cobalt metal and manganese metal, that

(1) the cobalt metal/manganese metal atomic ratio is from 99.50/0.5 to 50/50, and

(2) the total concentration of the cobalt metal and the manganese metal in the oxidation reaction system is from 150 ppm to 5,000 ppm, wherein the bromine compound (C) is present in the oxidation reaction system in such a ratio and a concentration, calculated as bromine, that

(3) the atomic ratio of bromine/cobalt metal + manganese metal does not exceed 1.5/1, and

(4) the total concentration of bromine in the oxidation reaction system is from 50 to 2,500 ppm.

4,354,038

PROCESS FOR THE PREPARATION OF 3-HYDROXYBENZOIC ACID

Ruthard Potthast, Leverkusen; Werner Mentzel, Cologne, and Horst-Dieter Kramer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

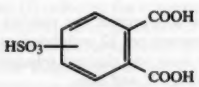
Filed Apr. 27, 1981, Ser. No. 257,676

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017983

Int. Cl.³ C07C *65/03*

U.S. Cl. 562—475 **12 Claims**

1. A process for the preparation of a 3-hydroxybenzoic acid alkali metal salt which comprises contacting a sulphophthalic acid of the formula



or a salt thereof with an alkali metal hydroxide in the form an alkali metal hydroxide solution having a strength of 43 to 50% by weight at a temperature in the range of 200° to 300° C. at a pressure of 10 to 30 bars.

4,354,039

CHLOROCITRIC ACIDS

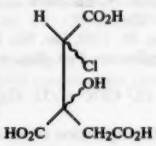
Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 973,504, Dec. 26, 1978. This application Sep. 21, 1981, Ser. No. 304,407

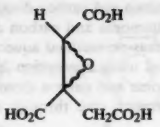
Int. Cl.³ C07C *59/245, 59/265*

U.S. Cl. 562—582 **10 Claims**

1. A process for the preparation of a chlorocitric acid of the formula



and stereoisomers and optical antipodes thereof which comprises the step of contacting an epoxyaconitic acid of the formula



and stereoisomers and optical antipodes thereof, with an alkali metal chloride or an alkaline earth metal chloride in an aqueous solvent in the presence of about one molar equivalent of hydrochloric acid at a reaction temperature of about 50° C. to 80° C.

4,354,040

PROCESS FOR SYNTHESIZING UREA

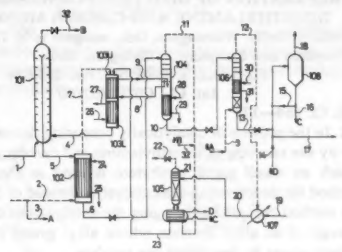
Shigeru Inoue, Kamakura; Hiroshi Ono, Fujisawa, and Hidetsugu Fujii, Mobara, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,302

Claims priority, application Japan, Sep. 12, 1980, 55-126043

Int. Cl.³ C07C *120/02*

U.S. Cl. 564—67 **4 Claims**



1. In a process for synthesizing urea including reacting in a urea synthesis zone ammonia and carbon dioxide at a urea synthesis pressure and temperature, separating from the resulting urea synthesis effluent unreacted materials as a gaseous mixture of ammonia and carbon dioxide, and absorbing the gaseous mixture in an absorbent to form an absorbate, recycling the absorbate together with the gaseous mixture to the urea synthesis zone, and obtaining urea from an aqueous urea solution resulting from the separation step of the unreacted materials, the improvement which comprises:

(a) maintaining the temperature and pressure in the urea synthesis zone at 170°–195° C. and 160–190 kg/cm^{2}G and maintaining the molar ratio of whole ammonia/whole carbon dioxide to be charged into the urea synthesis zone within 3.5–5.0;

(b) subjecting the urea synthesis effluent from step (a) to a stripping step by carbon dioxide in an amount at least 60% of the make-up carbon dioxide and at a pressure equal to the urea synthesis pressure and a temperature in the range of 170°–205° C. to decompose the unreacted materials and separate the same in the form of a gaseous mixture of ammonia and carbon dioxide, thereby lowering the total content of ammonia and carbon dioxide remaining in the urea synthesis effluent to 14–30% by weight;

(c) subjecting an effluent stream from step (b) to a high pressure decomposition under a pressure in the range of 12–25 kg/cm^{2}G to separate a part of the remaining ammonia and carbon dioxide by the condensation heat of the gaseous mixture separated in step (b), thereby lowering the total content of ammonia and carbon dioxide remaining in the effluent stream to 5–12% by weight;

(d) subjecting the effluent stream from step (c) successively to a low pressure decomposition, concentration and finishing steps;

(e) raising the pressure of an aqueous solution obtained by recovering ammonia and carbon dioxide separated in step (d), absorbing ammonia and carbon dioxide separated in step (c) in the thus-pressurized aqueous solution to form an absorbate and using absorption heat generated upon absorbing ammonia and carbon dioxide as a heat source for the concentration step through an indirect heat exchange;

(f) raising the pressure of the absorbate obtained in step (3) condensing into the thus-pressurized absorbate the gaseous mixture separated in step (b) to form a condensate, and using a part of the condensation heat generated upon the condensation of the gaseous mixture for carrying out step (c) as defined in the above and removing a part of the remaining condensation heat by generating steam so as to maintain the urea synthesis temperature at a predetermined temperature; and

(g) recycling the condensate and unabsorbed ammonia and carbon dioxide obtained in step (f) to the urea synthesis zone.

4,354,041
METHOD FOR DEACTIVATING CATALYST IN PREPARATION OF DIMETHYLFORMAMIDE FROM DIMETHYLAMINE AND CARBON MONOXIDE

Harold E. Bellis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 3, 1980, Ser. No. 193,834

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—123 **4 Claims**

1. In the process of catalytically preparing dimethylformamide by the reaction of dimethylamine and carbon monoxide in which an alkali metal methylate is used as the catalyst, a method for deactivating the catalyst at the end of the reaction, the method comprising bringing the catalyst into contact with enough of an alkyl formate whose alkyl group contains 1–3 carbon atoms to deactivate the catalyst.

4,354,042
PROCESS FOR MAKING N,N,N′,N′-TETRAACETYLETHYLENEDIAMINE

Stephen J. Hannam, Clwyd, Wales; John S. Saynor, and Anthony D. Watling, both of Leeds, England, assignors to Warwick Chemical Limited, Leeds, England

Filed Dec. 8, 1980, Ser. No. 214,404

Claims priority, application United Kingdom, Jun. 27, 1980, 8021142

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—144 **17 Claims**

1. A multicyclic process for making TAED which comprises, in each cycle, the step of reacting DAED with acetic anhydride, part at least of which is recovered from another cycle, and thereby forming a reaction mixture of TAED and acetic acid and anhydride and then distilling off acetic acid and working up the distillation residue to give substantially pure TAED, and in which the total volume, per unit volume of reaction mixture in this step, of distillate distilled from the reaction mixture in one cycle is more than the total volume, per unit volume of reaction mixture in this step, distilled from the reaction mixture in a preceding cycle.

4,354,043
NORBORNYL OXYACETALDEHYDE

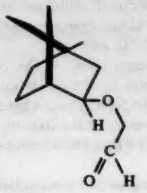
Robert P. Belko, Woodbridge; Richard M. Boden, Monmouth Beach, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,012

Int. Cl.³ C07C *47/115*

U.S. Cl. 568—445 **1 Claim**

1. The norbornyl oxyacetaldehyde having the structure:



4,354,044
METHOD FOR PREPARING METHACROLEIN

Atsushi Aoshima, Yokohama; Ryoichi Mitsui, and Hitoshi Nihei, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 20, 1981, Ser. No. 265,136

Claims priority, application Japan, May 24, 1980, 55/69435

Int. Cl.³ C07C *45/32, 45/29*

U.S. Cl. 568—479 **5 Claims**

1. A process for producing methacrolein by oxidizing isobutylene or tertiary butanol with molecular oxygen in the presence of a catalyst, characterized in that said catalyst has the general composition:

$$Mo_{12}Fe_aNi_bTe_cTl_dPb_fX_gO_h$$

wherein

a, b, c, d, f and g represent the number of atoms of the respective elements per 12 molybdenum atoms;

X represents at least one element selected from the group consisting of Cu, Nd and Sm;

a is a value of 0.2–6;

b is a value of 0.2–6;

a+b is a value of 1–10;

c is a value of 0.1–4;

d is a value of 0.1–3;

f is a value of 0.1–5;

g is a value of 0.1–5; and

h is the number of oxygen atoms for satisfying the valencies of the existing elements,

the reaction being carried out at a temperature of 200°–550° C. at a pressure of 0.5–10 atmospheres for 0.1 to 15 seconds at a space velocity of 100 to 5000 hr^{-1}.

4,354,045
PREPARATION OF FORMALDEHYDE

Franz Merger, Frankenthal, and Gerd Fouquet, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,822

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004436

Int. Cl.³ C07C *45/51, 45/65*

U.S. Cl. 568—487 **7 Claims**

1. A process for the preparation of formaldehyde by dehydrogenating methanol in the presence of a catalyst at an elevated temperature, wherein the reaction is carried out in the presence of a catalyst containing copper, zinc and tellurium, at from 300° to 750° C.

4,354,046

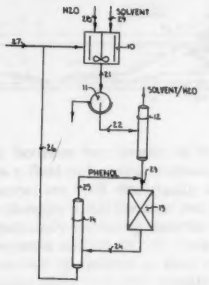
PROCESS FOR OBTAINING HIGH PURITY BISPHENOL A

Glen R. Ladewig, and Feng-Chih Chang, both of Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1981, Ser. No. 267,191

Int. Cl.³ C07C *37/84*

U.S. Cl. 568—724 **5 Claims**



1. In a purification process for 4,4′ isopropylidene diphenol wherein the crude reaction product, or the mother liquor from a first crystallization thereof, is purified by dissolving in an organic liquid solvent and crystallized therefrom the improvement which comprises (1) mixing water and organic solvent together with said crude reaction product, in a crystallizer, wherein water is present in an amount of from 2 to 9% by weight based on said crude bisphenol, (2) heating said mixture to a temperature of about 80° to 100° C. sufficient to produce a single liquid phase, (3) reducing the temperature of said liquid phase to a lower temperature of about 60° to 80° C. and holding at that temperature for a time sufficient to begin crystallization, (4) reducing the temperature of said liquid phase further to an ambient temperature of about 20° to 35° C. to obtain the maximum yield of crystals of the said 4,4′ product therefrom, (5) removing said solvent and water from the mother liquor from step 4, (6) mixing phenol with said mother liquor, (7) contacting the mixture of phenol and mother liquor at ambient temperature with a cation exchange resin in the acid form for a sufficient time to convert at least some of the impurities to the desired product, (8) removing phenol from said mixture, and (9) recycling the remainder to the crystallizer of step 1, and wherein the organic solvent in step 1 is benzene, toluene, xylene, methylene chloride, chloroform, ethylene dichloride or 1,1,1-trichloroethane and the entire process is accomplished under substantially atmospheric pressure.

4,354,047

NICKEL CATALYSTS FOR OXIDATIVE COUPLING OF PHENOLS

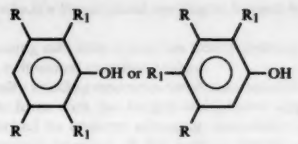
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1981, Ser. No. 266,556

Int. Cl.³ C07C *39/14*

U.S. Cl. 568—730 **12 Claims**

1. A process for preparing by an oxidation coupling reaction a carbon-carbon coupled condensation product of a substituted phenol of the formula



wherein each R is hydrogen, halogen or R_1, and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon and hydrocarbonoxy comprising contacting the substituted phenol with an oxygen-containing gas in the presence of a heterogeneous dehydrogenation catalyst comprising nickel in an oxidation state suitable for forming carbon-carbon oxidatively coupled reaction products.

4,354,048

COPPER CHROMITE CATALYSTS FOR OXIDATIVE COUPLING OF PHENOLS

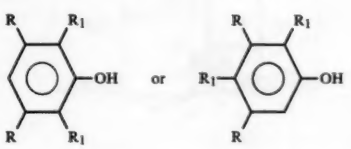
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1981, Ser. No. 266,558

Int. Cl.³ C07C *39/14*

U.S. Cl. 568—730 **10 Claims**

1. A process for preparing by an oxidation coupling reaction a carbon-carbon coupled condensation product of a substituted phenol of the formula



wherein each R is hydrogen, halogen or R_1, and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon and hydrocarbonoxy comprising contacting the substituted phenol with an oxygen-containing gas in the presence of a heterogeneous dehydrogenation catalyst comprising the oxides of copper and chrome present in an oxidation state suitable for forming carbon-carbon oxidatively coupled reaction products.

4,354,049

PROCESS FOR THE PRODUCTION OF AROMATIC HYDROCARBONS

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 11, 1981, Ser. No. 242,487

Claims priority, application United Kingdom, Mar. 15, 1980, 8008871

Int. Cl.³ C10G *49/08*

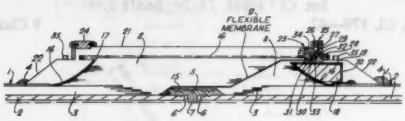
U.S. Cl. 585—415 **10 Claims**

1. A process for the production of aromatic hydrocarbons which process comprises contacting at elevated temperature and in the vapour phase a C_2 to C_{12} aliphatic hydrocarbon feedstock with a catalyst comprising a crystalline aluminosilicate having a silica to alumina molar ratio greater than 12:1 which has been modified by incorporation therein of aluminium either by exchange or impregnation.

4,354,050
ELECTRIC CABLE JOINTS

Brian Gregory, Dartford, England, assignor to BICC Public Limited Company, London, England

Filed Sep. 10, 1980, Ser. No. 185,944
Claims priority, application United Kingdom, Sep. 6, 1979, 7930994
Int. Cl.³ H02G 15/25
U.S. Cl. 174—22 R 10 Claims

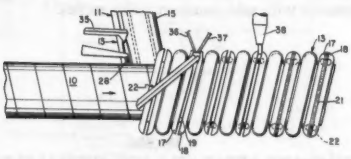


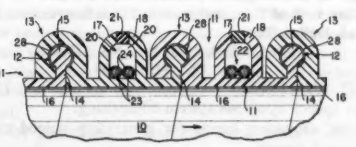
1. A stop joint between two lengths of fluid-filled electric cable enclosed in a fluid-tight joint enclosure, in which joint the cable conductors are both electrically and mechanically connected by an elongate metal member and a laminated body of lappings of electrically insulating material is built up on the elongate metal member and on the cut back ends of the two cable lengths, wherein the barrier to flow of dielectric fluid from one to the other of the two cable lengths connected at the joint comprises the elongate metal member, a single sheet of fluid-impermeable insulating material incorporated in the laminated body, which sheet extends between and is sealed to the elongate metal member and to the fluid-tight enclosure to form a flexible membrane dividing the enclosure transversely into two parts.

4,354,051
ELECTRICAL CURRENT-CARRYING FLEXIBLE HOSE AND METHOD OF MAKING SAME

Thomas A. Kutnyak, Greenwood, S.C., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Apr. 15, 1981, Ser. No. 254,434
Int. Cl.³ A47L 9/24; F16L 11/12, 11/16; B29D 23/12
U.S. Cl. 174—47 11 Claims





1. In an electrical current-carrying flexible hose wherein a strip is helically wound in tubular form with interlocking tongue and groove edge portions connecting adjoining convolutions, the improvement comprising:

(a) a hollow central selction on said strip between the tongue and groove edge portions,

(b) electrical conductor means disposed within said hollow central section,

(c) a longitudinal opening in said hollow central section through which said conductor means is inserted, and

(d) sealing means closing said opening.

7. A method of making an electrical current-carrying flexible hose which includes an extended strip having matching tongue and groove edge portions alongside a hollow central section in which a longitudinal opening is formed which comprises:

(a) advancing said strip toward an axially rotating and translating cylindrical mandrel surface,

(b) helically winding said strip about said mandrel surface in tubular form with the tongue and groove edge portions interlocked to connect adjoining convolutions with the longitudinal opening of the hollow central section directed outwardly,

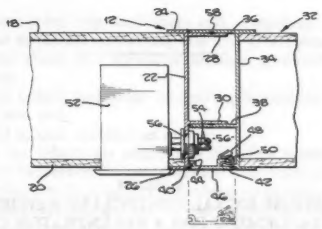
(c) continuously laying at least one insulated electrical conductor in said hollow central section through said longitudinal opening, and

(d) closing said longitudinal opening with sealing means.

4,354,052
PATIO ENCLOSURE WITH ELECTRICAL CONDUIT HOUSING

Stanley J. Albany, Costa Mesa, and Robert Lizardi, Jr., Mission Viejo, both of Calif., assignors to C-Thru Aluminum Awning Co., Fullerton, Calif.

Filed Dec. 12, 1980, Ser. No. 215,672
Int. Cl.³ H02G 3/28
U.S. Cl. 174—48 3 Claims



1. In a prefabricated patio enclosure,

modular wall panels having inner and outer sides and upper and lower and opposite vertical transverse frame members,

a vertical frame member of a first wall panel having a vertical web extending therefrom at an angle thereto and having a free vertical edge,

a vertical frame member of a second wall panel having a vertical web extending therefrom at an angle thereto and having a free vertical edge,

a vertical web of one of said wall panels comprising a spacer between adjacent vertical frame members of adjacent wall panels to maintain said adjacent vertical frame members of said adjacent wall panels in a fixed spaced relationship,

said vertical webs being spaced inwardly from one of said inner and outer sides of adjacent wall panels to define an elongated conduit housing having an open side of a width determined by the fixed spaced relationship between adjacent wall panels,

electrical conductor means in said housing,

and a closure strip closing the open side of said elongated conduit housing.

4,354,053
SPLICED HIGH VOLTAGE CABLE

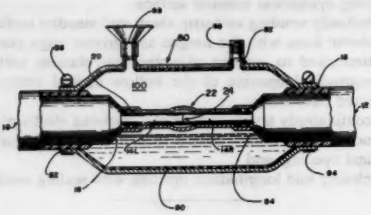
Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Division of Ser. No. 874,104, Feb. 1, 1978, Pat. No. 4,226,251.
This application Mar. 10, 1980, Ser. No. 128,970
Int. Cl.³ H01B 7/02
U.S. Cl. 174—84 R 11 Claims

1. Spliced high voltage cable prepared from a splicing of two

insulation and conductor portions, said spliced cable comprising:

electrically and mechanically joined conductor portions, and,



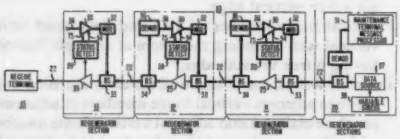
a monolithic cured polymeric insulation splice prepared by the reaction of a castable mixture comprising a liquid polyolefin having addition polymer reactable sites, a chain extension agent reactive with said polyolefin's reactive sites, and a particulated solid saturated polyolefin with the two insulation portions.

4,354,054

CABOOSE SIGNAL CONTROLLED REPORTING ARRANGEMENT FOR A REGENERATOR CHAIN

Jules A. Bellisio, Wall Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1981, Ser. No. 254,914
Int. Cl.³ H04J *3/08;* H04B *3/46*
U.S. Cl. 178—3 5 Claims



2. A status reporting arrangement for a digital transmission system (10) having a plurality of stations (11, 12, 13) arranged in a tandem configuration and arranged for reporting status information from the stations to a terminal (20), the system BEING CHARACTERIZED BY

a first station (13) including a reporting circuit (30) arranged for receiving (36) a train of received message signals followed by a received caboose signal;

means (50), included in the reporting circuit and responsive to received signals, for detecting and producing a first signal indicating the presence of the received caboose signal and for detecting and producing a second signal indicating the absence of the received caboose signal; and

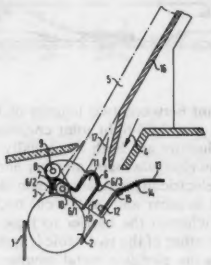
means (70, 80), included in the reporting circuit (30) and responsive to the second level signal, for transmitting a message (91) from the first station with an appended caboose signal (93).

4,354,055

DEVICE FOR TELETYPEWRITERS FOR THE DEPOSIT OF SHEET-TYPE RECORDING MEDIA

Peter Koller, Munich, and Ulrich Mayr, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,387
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007838
Int. Cl.³ H04L *15/24;* B65H *5/00*
U.S. Cl. 178—42 9 Claims



1. Apparatus for use in a printing device for depositing sheet-type recording media transported through a printing area over a platen into a deposit tray disposed above said platen having transport roller means arranged above said platen for seizing said recording medium after such has passed through said printing area and lifting such above a support wall serving as a lower ledge to said deposit tray, the improvement comprising a pivotably mounted carrier bracket in which said transport roller means and support wall are disposed in common, a stripper surface formed on said support wall for guiding said recording medium into engagement with said transport roller means, and a bias means disposed at said stripper surface for resiliently pressing said recording medium into frictional engagement with said transport roller means.

4,354,056

METHOD AND APPARATUS FOR SPEECH SYNTHESIS FILTER EXCITATION

George L. Brantingham, Lubbock, and Richard H. Wiggins, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,155
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM 12 Claims

1. A speech synthesis system comprising:

voiced excitation means for generating voiced excitation speech signals;

unvoiced excitation means for generating unvoiced excitation speech signals; said unvoiced excitation means comprising

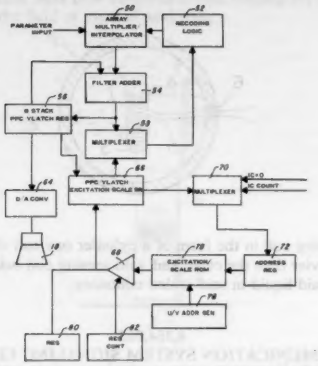
digital storage means for storing at least two unvoiced excitation signals different from each other, and

random address generating means coupled to said digital storage means for randomly generating the address of each of said different unvoiced excitation signals;

filter means coupled to said voiced and unvoiced excitation means for selectively converting said voiced excitation signals and said unvoiced excitation signals into digital speech signals representative of human speech;

digital-to-analog converter means coupled to said filter

means for converting said digital speech signals into analog signals representative of human speech; and



audio means coupled to said converter means for converting said analog signals into audible sound.

4,354,057

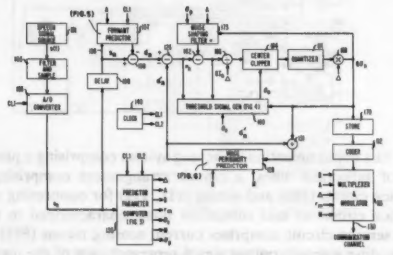
PREDICTIVE SIGNAL CODING WITH PARTITIONED QUANTIZATION

Bishnu S. Atal, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 8, 1980, Ser. No. 138,281

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SA **10 Claims**



1. A predictive signal communication system comprising means for analyzing an input signal in successive time intervals to generate a set of prediction signals for each interval;

means jointly responsive to the input signal and the interval prediction signals for producing a predictive residual signal;

means for generating a quantized signal corresponding to said predictive residual signal;

and means for encoding said quantized signal;

characterized in that

said quantized signal generating means **(160, 164, 166, 111, 168)** comprises means **(160)** responsive to said interval prediction signals, said predictive residual signal and said quantized signal for producing an adaptively varying threshold level signal,

means **(164)** responsive to said adaptively varying threshold level signal for dividing said predictive residual signal into a first distinct portion below said threshold level signal and a second distinct portion at and above said threshold level signal, and

means **(111)** responsive to said first and second distinct portions for producing first and second sets respectively of quantized signals.

4,354,058

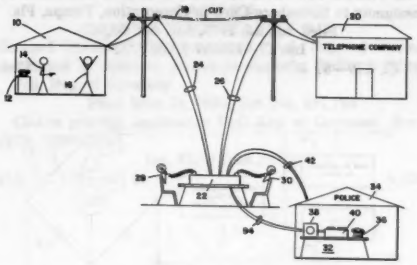
PORTABLE FIELD CONTROL UNIT FOR EMERGENCY TELEPHONE COMMUNICATIONS

Donald A. Chandler, Reno, and John W. Harper, Sparks, both of Nev., assignors to S.I.C., Inc., Havertown, Pa.

Filed Jun. 24, 1980, Ser. No. 162,415

Int. Cl.³ H04M *3/22*

U.S. Cl. 179—1 MN **6 Claims**



1. An emergency communications unit, comprising:

(a) terminal means for connecting said unit to telephone lines connected either to a telephone network or directly to a telephone;

(b) monitor output means for connecting monitoring equipment to said unit;

(c) first and second operator set means;

(d) means for selectively connecting said first operator set means for bidirectional communication over a first plurality of said telephone lines including connections to said network and to said telephone, and said second operator set means for bidirectional communication over a second plurality of said telephone lines, at least one of said telephone lines being common to both of said pluralities; and

(e) means for connecting said monitor output means so as to enable monitoring of said first operator set means.

4,354,059

VARIABLE-DIRECTIVITY MICROPHONE DEVICE

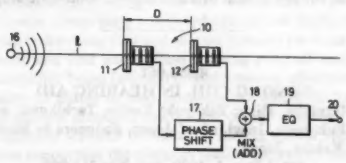
Yukinobu Ishigaki, Machida; Kaoru Totsuka, Tokyo; Makoto Yamamoto, Yokosuka, and Naotaka Miyaji, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 9, 1980, Ser. No. 185,516

Claims priority, application Japan, Sep. 11, 1979, 54-115664; Oct. 8, 1979, 54-139390[U]; Nov. 12, 1979, 54-145356; Nov. 12, 1979, 145357

Int. Cl.³ H04R *1/20*

U.S. Cl. 179—1 DM **7 Claims**



1. A variable-directivity microphone device comprising:

a microphone unit having a plurality of microphones;

means in which the low-frequency range components of the output signal of one of said microphones of said micro-

phone unit is resultingly added and mixed with the output signal of the other microphone and only the high-frequency range components are resultingly cancelled each other, said mixing means being capable of varying the mixing conditions; and

equalizer means for correcting the characteristic of said mixed signal.

4,354,060

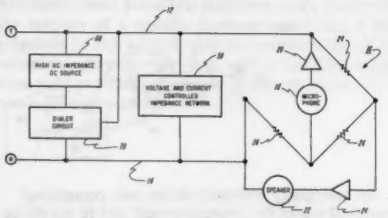
ELECTRONIC TELEPHONE

Frank Niertit, and Alvin R. Conner, both of Maitland, Fla., assignors to Stromberg-Carlson Corporation, Tampa, Fla.

Filed Jul. 26, 1979, Ser. No. 60,963

Int. Cl.³ H04M *1/00, 1/58*

U.S. Cl. 179—81 R **4 Claims**



1. An electronic telephone for use in a telephone network in which a D.C. power signal is supplied to the telephone from a central office over a pair of conductors and A.C. communication signals are coupled between the telephone and the central office over the same pair of conductors, said electronic telephone comprising:

transmit and receive solid-state amplifier means having sufficiently low D.C. resistance to be biased by said D.C. signal over said pair of conductors with substantially less than 4 volts D.C. and having sufficiently high A.C. impedance for transmitting A.C. communication signals over, and receiving A.C. communication signals from, said pair of conductors, said amplifier means being directly coupled to said conductors and said amplifier means including a transmitter section comprising a microphone and a first solid-state amplifier coupling said microphone to said pair of conductors and a receiver section comprising a speaker and a second solid-state amplifier coupling said speaker to said pair of conductors, said transmitter and receiver sections are connected in a Wien bridge arrangement, said Wein bridge being connected to differentiate between A.C. communication signals transmitted and received by said amplifier means for sidetone balance; and

a D.C. feedback circuit means having an input coupled across said pair of conductors and having an output coupled to said amplifier means for providing a stable reference voltage to said first and second solid-state amplifiers.

4,354,061

SENSING COIL IN HEARING AID

Yozo Marutake, Hino; Takayuki Kurita, Tachikawa, and Tatsuro Fukutome, Inagi, all of Japan, assignors to Rion Kabushiki Kaisha, Japan

Filed Dec. 1, 1980, Ser. No. 211,958

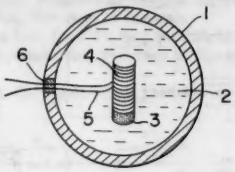
Claims priority, application Japan, Dec. 11, 1979, 54-171346[U]

Int. Cl.³ H04B *5/00*; H04R *25/00*

U.S. Cl. 179—82 **5 Claims**

1. A sensing coil unit in a hearing aid, which comprises:

a sealed container made of non-magnetic material, which is filled with a liquid; and



a sensing coil in the form of a cylinder one end of which is heavier than the other end, said sensing coil being floated in said liquid in said sealed container.

4,354,062

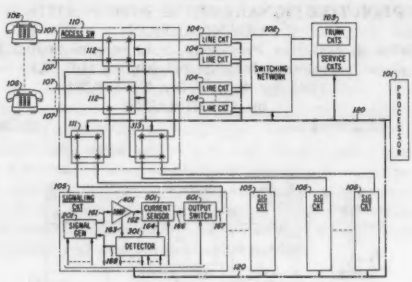
COMMUNICATION SYSTEM SIGNALING CIRCUIT

Harry E. Mussman, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1980, Ser. No. 117,281

Int. Cl.³ H04M *1/76, 19/02*

U.S. Cl. 179—84 A **13 Claims**



1. In a communication switching system comprising a plurality of subscriber lines, a circuit arrangement comprising a service circuit (**105**) and means (**111, 112**) for connecting said service circuit to said subscriber lines, characterized in that said service circuit comprises current sensing means (**501**) for generating a sensor output signal representative of the magnitude of current in a connected subscriber line, means (**333**) responsive to control signals defining a predetermined magnitude for generating a threshold signal having a magnitude corresponding to said predetermined magnitude, and comparator means (**340, 341, 342, 343, 344**) for generating an output signal when the magnitude of said sensor output signal is equal to or greater than the magnitude of said threshold signal.

4,354,063

TELEPHONE HANDSET WITH ILLUMINATED MAGNIFIER

James M. Kuka, P.O. Box 971, Reno, Nev. 89504

Filed Mar. 14, 1980, Ser. No. 130,253

Int. Cl.³ H04M *1/02, 1/22*

U.S. Cl. 179—103 **2 Claims**

1. A telephone handset, comprising a housing having a manually graspable portion providing a handle,

a receiving device mounted in said housing at one end of said handle,

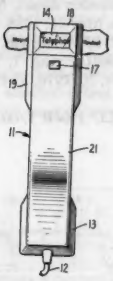
a transmitting device mounted in said housing at the other end of said housing,

said housing having a portion extending beyond said trans-

mitting device, and said portion being formed with an opening therethrough,

a magnifying lens mounted across said opening,

an electric light bulb mounted in said housing for illuminating the field of view of said lens,



a cable containing telephone wires connected to said transmitter and receiver, and

electrical wires for supplying electric current to said light bulb also contained in said cable.

4,354,064

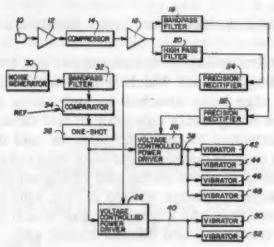
VIBRATORY AID FOR PRESBYCUSIS

Brian L. Scott, Denton, Tex., assignor to Scott Instruments Company, Denton, Tex.

Filed Feb. 19, 1980, Ser. No. 122,011

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 BC **4 Claims**



1. Apparatus for providing tactile stimulation to enable persons having high frequency hearing impairment to distinguish between selected frequency differing speech components, comprising:

means for capturing an audio frequency sound to generate an audio signal;

a compressor responsive to the audio signal to limit the frequency and amplitude thereof;

a band pass filter connected to the output of said compressor for extracting a mid-frequency signal component of the audio signal;

a high pass filter connected to the output of said compressor for extracting a high frequency signal component of said audio signal;

means responsive to the output of the band pass filter to generate a first control voltage;

means responsive to the output of the high pass filter to generate a second control voltage;

means for generating a random noise bi-level signal;

a first voltage controlled power driver responsive to the random noise bi-level signal and the first control voltage to produce an output signal proportional in amplitude to selected components of the audio sound;

a second voltage controlled power driver responsive to the random noise bi-level signal and the second control voltage to produce an output signal proportional in amplitude to selected signal components of the audio sound, and

a transducer responsive to the output signal of said first voltage controlled power driver and the output signal of said second voltage controlled power driver, said transducer having at least two spatially distributed vibrators responsive to the output signal of the first power driver for producing an areal response and at least two or contiguous vibrators responsive to the output signal of the second power driver for producing a punctuate skin response.

4,354,065

MINIATURE HEARING AID

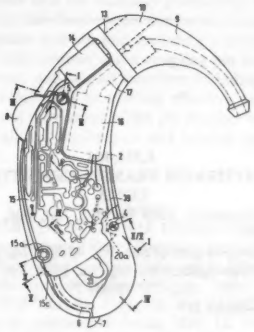
Gerhard Buettner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,766

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 7918029[U]

Int. Cl.³ H04R *25/02*

U.S. Cl. 179—107 H **4 Claims**



1. A miniature hearing aid device which is worn on the head, said device comprising a microphone, an ear piece receiver, a housing comprising first and second housing parts, an amplifier between said first and second housing parts of said housing, said amplifier being fastened in said housing, characterized in a plurality of plates in said housing, the amplifier having elements thereof arranged distributed on the plurality of plates, and opposite walls of the housing having spacer support projections supporting the plates in spaced superimposed relation, and characterized in that the projections provide ledges at the opposite walls of the housing parts having support surfaces for determining the position of the plates; in that the edges of the plates have recesses which allow the projections for the respective other plate to pass by; and in that the projections in the second housing part engage on the plates as counter-support to the projections of the first housing part when said second housing part is attached to the first housing part.

2. A miniature hearing aid device which is worn on the head, said device comprising a microphone, an ear piece receiver, a housing comprising first and second housing parts, an amplifier between said first and second housing parts of said housing, said amplifier being fastened in said housing, characterized in a plurality of plates in said housing, the amplifier having elements thereof arranged distributed on the plurality of plates, and opposite walls of the housing having spacer support projections supporting the plates in spaced superimposed relation, and characterized in that two plates have all of the elements of said amplifier distributed thereon, each housing part comprising a housing shell, three respective projections being present in each shell, the housing shells being of cooperating configuration to enclose said plurality of plates therebetween, at least

two pairs of the projections of the respective shells being aligned with each other and having aligned bores, and screw thread means extending through the aligned bores of the respective pairs of projections of the respective shells for securing the shells together with said plates supported by said projections within the enclosure formed by said shells.

3. A miniature hearing aid device which is worn on the head, said device comprising a microphone, an ear piece receiver, a housing comprising first and second housing parts, an amplifier between said first and second housing parts of said housing, said amplifier being fastened in said housing, characterized in a plurality of plates in said housing, the amplifier having elements thereof arranged distributed on the plurality of plates, and opposite walls of the housing having spacer support projections supporting the plates in spaced superimposed relation, and characterized in that the battery holder is seated between two plates carrying the amplifier so as to function as a spacer support.

4,354,066

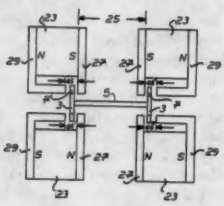
RIGID-DIAPHRAGM TRANSDUCER WITH PLURAL COILS

Robert W. Necoechea, 8609 DeSoto, Apt. 306, Canoga Park, Calif. 91304

Continuation-in-part of Ser. No. 42,837, May 29, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 186,942

Int. Cl.³ H04R *7/14*

U.S. Cl. 179—115.5 DV **31 Claims**



1. In an electroacoustic transducer, the combination comprising:

A. drives means including at least two magnet assemblies each providing a pair of opposed magnetic gaps therein, said magnet assemblies being spaced from one another a distance to form an acoustical gap; and

B. a diaphragm and coil support assembly arrangeable in the magnetic and acoustical gaps of the driver means and including:

(1) coil support means comprising a pair of elongated members spaced apart a distance greater than said acoustical gap;

(2) a spirally wound coil on each of said elongated members, the ends of said coils adapted to be coupled to electrical signal generating means; and

(3) a non-flexible non-planar diaphragm mounted on and arranged to extend between said elongated members, one of said elongated members being located in each of said pair of magnetic gaps and said diaphragm being located in said acoustical gap.

4,354,067

AUDIO-BAND ELECTROMECHANICAL VIBRATION CONVERTER

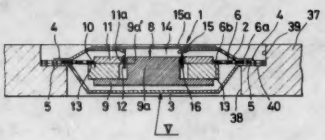
Kyota Yamada, and Akira Komatsu, both of Tokyo, Japan, assignors to Bodysonic Kabushiki Kaisha, Tokyo, Japan

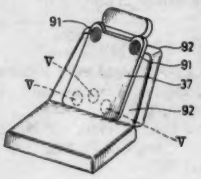
Filed Mar. 30, 1979, Ser. No. 25,501

Claims priority, application Japan, May 17, 1978, 53-58518; May 31, 1978, 53-65486; May 31, 1978, 53-65487; May 31, 1978, 53-65488; Jun. 22, 1978, 53-75580; Jul. 27, 1978, 53-103285[U]; Jul. 27, 1978, 53-103286[U]; Aug. 7, 1978, 53-96014; Oct. 5, 1978, 53-137134[U]; Nov. 20, 1978, 53-159887[U]; Dec. 26, 1978, 53-181743[U]

Int. Cl.³ H04R *1/00, 9/00*

U.S. Cl. 179—146 H **24 Claims**





1. Audio-band electromechanical vibration converter comprising:

a flat hollow casing comprising upper and lower frames;

a flat damper means which is held within said casing, its outer edge being attached to said casing and its middle portion being freely moveable in said casing;

a yoke attached to the inner edge of said damper means which extends outside of the yoke, said yoke being held by said damper means within said casing such that said yoke can displace relative to said casing, said yoke having a magnetic pole and a magnetic gap which is formed on a plane containing said damper means; and

a coil installed in said magnetic gap of said yoke, said coil being set on said plane; whereby a mechanical vibration is produced within said casing through relative displacement between said casing and said yoke, which results from magnetic interaction between the magnetic force developed in said coil and the magnetic force of said magnetic gap.

4,354,068

LONG TRAVEL ELASTOMER KEYBOARD

Anthony J. Sobol, III, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,284

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A **7 Claims**

1. A keyboard assembly comprising:

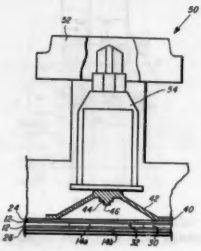
a first substrate having first switch points,

a second flexible substrate having conducting stripes and second switch points, said first and second switch points facing one another in opposed complementary relation,

an insulating spacer between said first and second substrates having a plurality of apertures in alignment with said first and second switch points, and

a third substrate positioned over said second substrate and

having a dome over the locations of each of said first and second switch points to be deformed to provide travel and tactile feedback when a force is applied to a dome for deforming a portion of the second substrate into a spacer aperture for pressing switch points of the first and second substrates together through the insulating spacer aperture, characterized in that the second substrate is formed of a first selected material for receiving said conductive stripes and switch points thereon and has a first selected thickness permitting repeated flexing deformation of the second substrate to a first selected extent over a long service life, the insulating spacer has a selected limited thickness permitting said second substrate portion to be repeatedly deformed to said first selected extent to press first and second switch points together through said insulating spacer apertures throughout said long service life, and said third substrate is formed of a second, elastomeric material and has each dome thereof proportioned to be deformed to a relatively much greater extent to provide long travel and high tactile feedback when said force is applied to a dome for deforming a portion of the second substrate into a spacer aperture for pressing said switch points of the first and second substrates together through the insulating spacer aperture throughout said long service life.

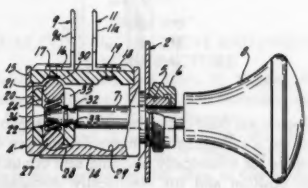


4,354,069

SLIDE SWITCH

Robert P. Ragen, Milwaukee, WI, assignor to Clum Manufacturing Co., Inc., Hartland, Wis.

Filed May 6, 1980, Ser. No. 147,202
Int. Cl.[3] H01H *15/00*
U.S. Cl. 200—16 R 11 Claims



1. A push-pull switch unit comprising a mounting support having an elongated recess, a set of spaced electrical contact means secured in fixed position within said recess of said support and in spaced relation to each other, a contact roller means rotatably mounted and having an axis parallel to said recess and movable into and from said recess, resilient means urging said contact roller means outwardly toward said recess, and means to reciprocally move said support and said contact roller means relative to each other to move said roller means into said recess and thereby to selectively engage said fixed contact means and said roller means to electrically connect said spaced contact means and to move said roller means from said recess, a bridging contact carrier mounted to said support for reciprocal movement past said spaced contact means, an external operating member slidably supported on said support and secured to said carrier for reciprocally positioning said carrier and said roller means into engagement with said spaced electrical contact means, a latch roller means mounted in said carrier in alignment with said contact roller means, said resilient means urging said contact roller means outwardly of said carrier into engagement with said support and said latch roller means outwardly into engagement with said support, said support having latch means for releasably engaging said latch roller means to hold said carrier in a first position with said contact roller means engaging said spaced contact means and in a second position with said contact roller means spaced from said spaced contact means.

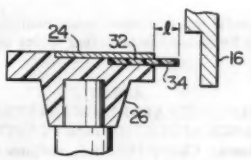
10. A switch unit comprising a support having a mounting means for securing said switch unit to another member, a set of spaced contact means secured in fixed position to said support in spaced relation to each other, a contact carrier unit movably mounted to said support and having bridging contact means for selection engagement with said spaced contact means, an actuator member connected to said carrier unit and extending from said carrier unit for manually positioning of said carrier unit, a snap-together fixed connection between said carrier unit and said actuator member and including a coupling opening defined by a wall member and a coupling pin member having a holding recess, one of said members including a resiliently mounted movable wall permitting effective enlargement of said opening and movement of the pin member into said opening of said wall and meshing of said holding recess and said wall member.

4,354,070

DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE

Masazumi Sone, Tokyo; Takao Miyashita, Mito, and Hiromitsu Nagae, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,484
Claims priority, application Japan, Mar. 12, 1980, 55-30341
Int. Cl.[3] H01H *19/06, 1/00*
U.S. Cl. 200—19 R 5 Claims

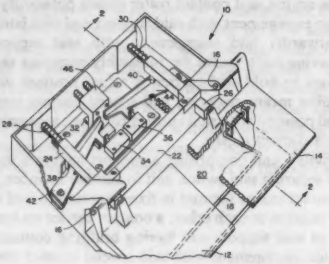


1. A distributor for internal combustion engine comprising:
(a) a cam shaft located within a housing to rotate in synchronism with the revolution of an engine;
(b) a cap detachably engaged with said housing;
(c) a stationary electrode fastened to said caps the number of which is the same as that of cylinders of the engine;
(d) a central terminal to which a high voltage is introduced from an ignition coil and which is secured to said cap;
(e) an insulating base secured to said cam shaft;
(f) a first electrode of conductive metal secured to said insulating base and which is in contact with a center carbon brush electrically connected to said central terminal; and
(g) a second electrode electrically connected to said first electrode, secured to said insulating base to oppose said stationary electrode, and which is formed of the mixture of fine particles of conductive and resistive materials, the minimum length from the discharge end of said second electrode to the first contact between said first and second electrodes being selected to be 5 mm or above.

4,354,071
PLURAL PEDAL FOOT CONTROL

Helmut Pietschmann, Karlsbad, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed May 15, 1980, Ser. No. 150,057
Int. Cl.³ H01H *21/26*
U.S. Cl. 200—86.5 4 Claims



1. In a foot controller having plural pedals for actuating and controlling selected functions responsive to a user stepping on and depressing one or more of the pedals, the improvement comprising a system to provide each of said pedals with substantially the same tactile feel to the user whether the pedals are depressed singly or in combination comprising:

(a) a base (**20**) including means defining a generally horizontally oriented pivotal axis (**16**) spaced above said base;

(b) at least two, side-by-side foot pedals (**12, 14**) mounted to said base for movement about said pivotal axis;

(c) plural helper spring means (**24, 26, 28, 30**), one associated with each foot pedal for independently urging its associated pedal upwardly to a first position;

(d) a main spring (**18**) between said base (**20**) and pedals (**12, 14**) for urging said pedals upwardly about said pivotal axis (**16**) to said first position, said main spring being common to all of said pedals and being substantially stronger than said helper spring means so that depressing, singly, any one of said pedals against said main spring removes the bias of said main spring from each pedal not depressed; and

(e) each pedal not depressed being maintained at said first position by its associated helper spring means.

4,354,072
PYROLYTIC CARTRIDGE INTERRUPTION ASSISTANCE ACTUATOR FOR PUFFER BREAKER

Heinz O. Noeske, Cherry Hill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,403
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A 11 Claims

1. A circuit breaker comprising:

a first main contact;

a second main contact affixed to an actuating rod and movable relative to said first main contact between a first position in which said first main contact is in abutment with said second main contact and a second position in which said first main contact and said second main contact are separated;

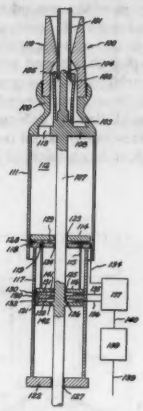
nozzle means surrounding said contacts;

an enclosed chamber for storing insulating gas, said chamber being in flow communication with said nozzle means;

current detection means connected to said first and second contacts for measuring a parameter of current flow through said contacts;

a first actuating means for moving said second contact relative to said first contact when opening is required during operation while the magnitude of current flow is below a predetermined level; and

a second actuating means for moving said second contact relative to said first contact when said parameter of current flow through said contacts detected by said current

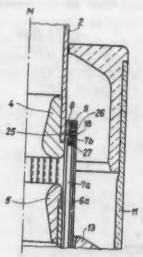


detection means indicates that rapid contact separation is required.

4,354,073
ELECTRIC GAS BLAST CIRCUIT BREAKER

Ruediger Hess, and Heiner Marin, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,206
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2908982
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A 8 Claims



1. An electric gas blast circuit breaker having two stationary contact pieces, a switching unit movable between closed and open positions for electrically bridging said contact pieces in the closed position and for electrically disconnecting said contact pieces in the open position whereby an arc develops when said switching unit is moved to the open position, and gas blast means for blasting a stream of gas through the arc when said switching unit is moved to the open position, said switching unit including a supporting body, a slide contact ring made of arc-resistant material slideably contacting one of said contact pieces in the closed position, said ring being mounted on said supporting body so as to be electrically insulated therefrom, and a plurality of elongated contact elements disposed in said supporting body at least some of said contact elements making direct contact with and electrically connecting said contact pieces when said switching unit is in the closed position, and means for electrically connecting as least one of said

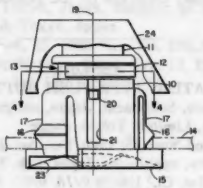
contact elements with said slide-contact ring when said switching unit is in the closed position and through all movement thereof into the open position.

4,354,074

ALTERNATE ACTION MECHANISM

Kenneth C. Aurand; Ralph J. Schneider, both of Freeport, and Gale R. Turner, Orangeville, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 1, 1981, Ser. No. 279,410
Int. Cl.³ H01H 13/56
U.S. Cl. 200—153 J 13 Claims



1. In an alternate action mechanism of the type having an inner member telescopingly mounted in an outer member for movement relative thereto along an axis between first and second terminal positions and biased toward the first terminal position, the inner member having a cam track adapted to cooperate with a cam follower carried by the outer member and constrained from movement relative thereto along the axis, cooperation of the cam track and cam follower being such that successive actuations of the inner member beyond the second terminal position alternately cause the inner member to be latched at and released from the second terminal position, movement of the inner member relative to the outer member requiring oscillation of the cam follower transverse to the axis, the improvement which comprises:

an annular channel in the outer member encircling the axis; and

a C-shaped collar having a pair of extremities and an inwardly projecting cam follower between the extremities, said collar being configured to be positioned in said annular channel and the extremities thereof being configured to cooperate with the outer member so as to bias the cam follower toward the axis so that the cam follower engages the cam track, whereby said collar is permitted to oscillate about the axis as required for the cam follower to follow the cam track.

4,354,075

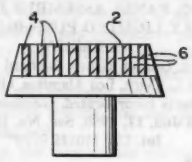
ELECTRICAL CONTACT ELEMENT AND PROCESS FOR ITS MANUFACTURE

Dieter Stöckel, Birkenfeld, and Hans H. Kocher, Pforzheim-Dillweissenstein, both of Fed. Rep. of Germany, assignors to G. Rau, Pforzheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 22,358, Mar. 20, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,841
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813087
Int. Cl.³ H01H 1/02
U.S. Cl. 200—262 7 Claims

1. An electrical contact element formed of composite material which is resistant to metal migration during use including, in a major proportion by weight, at least copper and palladium which are soluble in each other, which are heterogeneously combined in said composite material, said composite material being a fiber composite material including said copper component in the form of a matrix and said palladium component in the form of a large number of uniformly extending fibers which are embedded and metallurgically bonded to said copper matrix and which extend substantially entirely through said matrix, said fibers and said matrix having been produced by joint plastic shaping of a bundle of copper coated palladium wires which are initially arranged in parallel orientation to each other, the diameter of said fibers being from 0.001 to 0.1 mm with the fibers substantially at right-angle to the contact surface in the finished product.

2. An electrical contact element formed of composite material which is resistant to metal migration during use including, in a major proportion be weight, at least silver and palladium which are soluble in each other, which are heterogeneously combined in said composite material, said composite material



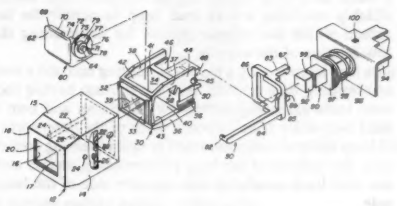
being a fiber composite material including said silver component in the form of a matrix and said palladium component in the form of a large number of uniformly extending fibers which are embedded and metallurgically bonded to said silver matrix and which extend substantially entirely through said matrix, said fibers and said matrix having been produced by joint plastic shaping of a bundle of silver coated palladium wires which are initially arranged in parallel orientation to each other, the diameter of said fibers being from 0.001 to 0.1 mm with the fibers substantially at right-angle to the contact surface in the finished product.

4,354,076

SWITCH POSITION INDICATOR

Kurt Lutzenberger, Arlington Heights, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed Sep. 8, 1980, Ser. No. 184,858
Int. Cl.³ H01H 9/16
U.S. Cl. 200—308 5 Claims



1. A button assembly for a control switch device having a reciprocally movable actuator extended from a relatively fixed body portion of the device, said button assembly comprising:

a housing having a window portion and having means attachable to said actuator for transmitting reciprocal movement of said actuator to said housing;

rotor means rotatably mounted to the housing for rotation about an axis fixedly disposed relative to said window portion of the housing, said rotor means including position indicating means having a plurality of portions disposed for rotation sequentially into alignment with said window portion of the housing in accordance with the rotation of said rotor means, said rotor means also including an end wall provided with a cam-surface means to permit rotation of said rotor means only in response to movements of said actuator signifying a change in operative condition of said switch device; and

motion convertor means disposed for connection to said fixed body portion of the control device and extended into

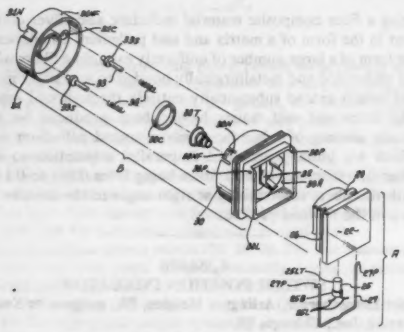
said housing, said motion convertor means including an eccentric arm disposed to engage said cam surface means for converting reciprocal movement of said actuator signifying a change in operative condition of said switch device into corresponding rotational movement of said rotor means and aligning a respective portion of said position indicating means with said window portion of the housing to indicate the position of said actuator relative to said fixed body portion of the control device.

4,354,077

PUSH-BUTTON PANEL ASSEMBLY INCLUDING AN INDIVIDUALLY LIGHTED PUSH-BUTTON SWITCH ASSEMBLY

Billy D. McMains, Garden Grove; Richard G. Mendoza, Downey, and Gerald L. Clark, Los Alamitos, all of Calif., assignors to Jay-El Products Incorporated, Gardena, Calif.

Filed Jun. 11, 1980, Ser. No. 158,566
Int. Cl.³ H01H *9/18*
U.S. Cl. 200—314 **10 Claims**



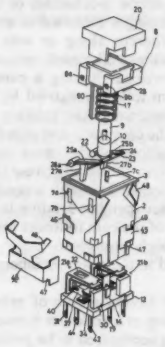
1. A push-button switch assembly for a keyboard comprising
a lamp capsule having a closed, hollow interior constructed and defined by an operating surface on one side thereof and a lamp mounting socket on the opposite side thereof for slidably receiving a wire lead lamp to permit the lamp to extend within the capsule interior for illuminating the hollow interior of the capsule,
a wire lead lamp having a light transmitting end and a non-light transmitting base portion, the base portion having the lamp wire leads extending outwardly therefrom and bent to extend outwardly from opposite sides of the base portion,
said lamp being slidably mounted in said mounting socket with only the bottom of the base portion being visible and with the wire leads overlying said opposite side of the lamp capsule,
housing means for the lamp capsule including a body portion having a lamp capsule receiving socket defined at one end thereof for slidably receiving the lamp capsule therein to permit only the operating surface to be exposed outside of the housing body portion when it is positioned within said socket to thereby close off said socket,
means for swingably mounting said lamp capsule to said housing body portion to permit the lamp capsule to be moved between an open and closed position relative to the capsule receiving socket and to expose said lamp when in the open position,
the capsule receiving socket for the body portion mounting a pair of wiping electrical contacts therein for inter-engagement with the lead wires of the lamp when the lamp capsule is in a closed position to provide an electrical conductive circuit for energizing the lamp,
the opposite end of the housing body portion slidably mounting an enclosed push-button base means for permitting relative movement between the body portion and the base means, said base means comprising a pair of resiliently mounted electrical contact pins having ends extending outside of the base means at the end opposite from the body portion, the outside of the body portion having an electrical conductive segment defined thereon in electrical conductive relationship with said wiping contacts and in electrical conductive relationship with said contact pins to permit the lamp to be continuously energized therethrough, said base means housing a resiliently mounted switch actuator secured to said housing body portion and adapted to be responsive to a force applied to the operating surface of the body portion to be moved therewith for transmitting a switch operating motion through said base means; the relative movement between the body portion and the base means for said housing placing said elements of the housing in a telescoped relationship.

4,354,078

ILLUMINATING TYPE PUSH BUTTON SWITCH

Sumio Yoshimura, Sekimachi, Japan, assignor to Sun Dengyosha Company, Limited, Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,392
Claims priority, application Japan, Feb. 13, 1980, 55-15575
Int. Cl.³ H01H *9/16, 9/02, 5/06*
U.S. Cl. 200—314 **7 Claims**



1. An illuminating type push button switch comprising:
a casing having a bottom plate;
microswitches mounted on said bottom plate;
a lamp socket supporting a lamp, said lamp socket being positioned laterally adjacent said microswitches and comprising a lamp support member at a position spaced upwardly from said bottom plate, a contact plate having a first end inclined inwardly toward said lamp support member and a second end connected to an external terminal, and a lamp bottom terminal contact plate disposed on said bottom plate directly beneath said lamp support member;
a push member mounted for heightwise movement relative to said casing; and
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member.

5. An illuminating type push button switch comprising:
a casing having a bottom plate;
microswitches mounted on said bottom plate;
a lamp socket supporting a lamp and positioned laterally adjacent said microswitches;
a push member mounted for heightwise movement relative to said casing; and
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member,

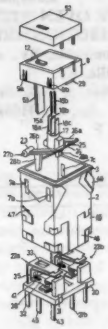
said actuator having a substantially ⊐-shaped configuration formed by a pair of side rods joined by a transverse rod, said actuator being mounted for vertical pivotal movement in said casing by means of shafts on said pair of side rods, said transverse rod having on the upper surface thereof a projection in abutment with said push member, whereby said heightwise movement of said push member causes said actuator to pivot vertically about said shafts, and said side rods having on lower surfaces operating members in abutment with said microswitches.

4,354,079

ILLUMINATING TYPE PUSH BUTTON SWITCH

Sumio Yoshimura, Tokyo, Japan, assignor to Sun Dengyosha Company, Limited, Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,393
Claims priority, application Japan, Feb. 13, 1980, 55-15574
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—314 **7 Claims**



1. An illuminating type push button switch comprising:
a casing having fixedly positioned therein microswitches;
a push member mounted for heightwise movement relative to said casing;
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member;
a light emitting diode mounted on said push member and having terminals;
exterior terminals extending from said casing;
plural coil springs, one each of said coil springs being positioned between a said terminal of said light emitting diode and a respective said exterior terminal, such that downward movement of said push member causes said coil springs to electrically connect said terminals of said light emitting diode with respective said exterior terminals; and
spring support means for mounting said coil springs in said casing and having at least one guide plate means for preventing contact between said coil springs.

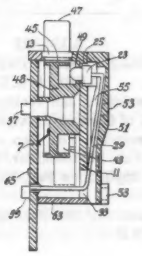
4. An illuminating type push button switch comprising:
a casing having a bottom plate;
microswitches mounted on said bottom plate;
a push member mounted for heightwise movement relative to said casing;
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member;
each said microswitch comprising normally open and normally closed contacts mounted on said bottom plate in opposed relation with a predetermined vertical space therebetween, a fixed bed supported on said bottom plate, a substantially L-shaped common terminal having a first end extending through said bottom plate to the exterior of said casing and a second secured to said fixed bed, an L-shaped movable member extending along said common terminal and having a first end pivotally supported on said common terminal and a second end having formed therein a longitudinally extending notch and a laterally extending engaging groove, a conductive plate having at a first end thereof a pair of contacts positioned between said normally open and normally closed contacts and in a second end thereof a longitudinally extending notch, said second end of said conductive plate being fitted and engaged with said engaging groove of said movable member, and a coil spring having a first end secured to an innermost edge defining said notch of said conductive plate and a second end secured to said common terminal and extending through said notch in said movable member at a position thereof beneath said engaging groove;
a light emitting diode mounted on said push member and having terminals; and
plural coil springs, one each of said coil springs being positioned to electrically connect a respective said terminal of said light emitting diode with a respective exterior terminal upon downward movement of said push member.

4,354,080

LIGHTED CODING SWITCH

Guenter Murmann, Pegnitz, Fed. Rep. of Germany, assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Nov. 5, 1980, Ser. No. 204,275
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 7931211[U]; Sep. 30, 1980, 8026144[U]
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—316 **13 Claims**

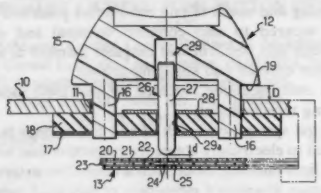


1. A lighted coding switch, comprising:
an encoding wheel having a peripheral rim with symbols formed along its outside surface;
means for selectively rotating the encoding wheel;
a housing for retaining and rotatively supporting said encoding wheel, the housing including a back wall, a printed circuit board forming a front wall and peripheral side walls, one of said side walls having means for viewing a portion of the outside surface of the rim, the back wall having a light support aperture located adjacent to said means for viewing;
a light source for illuminating the viewed portion of the rim;
means for supporting the light source in said aperture and outside the area defined within the rim, so that the light source illuminates at least one symbol disposed within the viewed portion of the rim; and
means for conductively engaging the printed circuit board as the coding wheel rotates for defining electrical signals representative of illuminated symbols of the viewed portion of the rim.

4,354,081
PUSH-BUTTON OR KEYBOARD WITH DEPRESSABLE KEYS

Edouard Serras-Paulet, Casa Nostra Pech des Treilles, Puylaroque, France (82240)

PCT No. PCT/FR79/00114, § 371 Date Jul. 22, 1980, § 102(e) Date Jul. 22, 1980, PCT Pub. No. WO80/01219, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 28, 1979, Ser. No. 261,239
Claims priority, application France, Nov. 29, 1978, 78 33734
Int. Cl.³ H01H *13/00*
U.S. Cl. 200—340 13 Claims

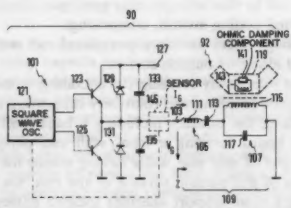


1. A switch device comprising; an upper plate formed with a hole, a depressable key extending through said hole and being movable between a rest and a working position, return means provided on the lower end of the key and cooperating by megnetic attraction with the upper plate for returning the key from its working position to its rest position, a free piston guided within the device for reciprocal movement relative to the key and in the same direction as the key, a lower plate located under the upper plate at a distance therefrom, a switchable element carried by the lower plate and adapted to be actuated by the free piston when the key is depressed from its rest position, and magnetic means being provided on the key and the free piston and cooperating with each other for permanently exerting a magnetic attraction force on the free piston.

4,354,082
COOKING VESSEL FOR AN INDUCTION COOKING APPLIANCE

Rudy Tellert, Schweinfurt, and Wolfgang Fischer, Königsberg, both of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,306
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906912
Int. Cl.³ H05B *6/08, 6/12*
U.S. Cl. 219—10.49 R 17 Claims



1. An induction cooking arrangement, comprising:

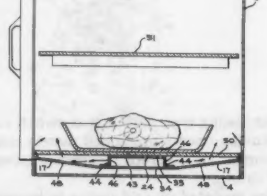
an induction cooking appliance, including a square wave voltage generator, a series resonant circuit whose resonant frequency is lower than the frequency of the third harmonic of the fundamental frequency of said square wave voltage generator, a parallel resonant circuit coupled in series with said series resonant circuit, the resonant frequency of said parallel resonant circuit being substantially equal to the fundamental frequency of said square wave voltage generator and smaller than the resonant frequency of said series resonant circuit, and

a cooking vessel including walls and a bottom, said bottom including an eddy current induction layer composed of a conductive, non-magnetic material coupleable to said parallel resonant circuit, the thickness of said eddy current induction layer for generation of a load phase displacement of approximately 20° to 40° between the square wave output voltage and the fundamental frequency component of the output current of said square wave voltage generator, the induction layer having one of a number of constructions with a specific electrical resistance less than 0.035×10^{-6} Ωm or more than 0.035×10^{-6} Ωm, and thinner than 0.2 mm for a construction whose specific electric resistance of the material of the eddy current induction layer is smaller than 0.035×10^{-6} Ωm, and thicker than 0.2 mm for a construction whose specific electric resistance is greater than 0.035×10^{-6} Ωm.

4,354,083
MICROWAVE OVEN WITH NOVEL ENERGY DISTRIBUTION ARRANGEMENT

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 5, 1980, Ser. No. 204,126
Int. Cl.³ H05B *6/72*
U.S. Cl. 219—10.55 F 10 Claims



1. A microwave oven comprising a resonant cooking chamber, a support shelf within said cooking chamber for carrying an object to be heated, a rectangular waveguide located below said support shelf, said waveguide having a top wall, and side walls extending perpendicular to said top wall, the top wall of said waveguide spaced not more than a wavelength of the applied microwave energy from said support, first openings in said top wall for radiating microwave energy toward said shelf, second openings in said side walls, microwave energy reflecting means spaced from said second openings in said side walls for reflecting microwave energy passing through said side wall openings upwardly toward said shelf.

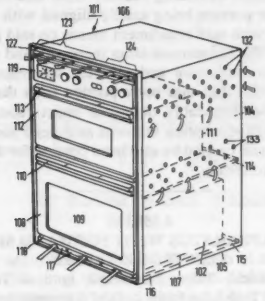
4,354,084
TWIN BAKING OVEN, PARTICULARLY BUILT-IN BAKING OVEN

Julius Husslein, Vachendorf, and Johann Klement, Traunreut, both of Fed. Rep. of Germany, assignors to Bosch Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 12,127
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825461
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 R 2 Claims

1. In a double baking oven unit having two baking ovens disposed one above the other and enclosed in a common housing, one of the ovens being a microwave oven, and switching, control and operating devices for both of the ovens disposed in

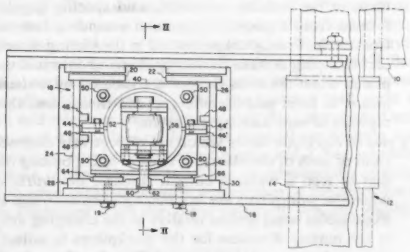
an upper space in the housing, cooling-air channels formed with inlet and outlet openings provided outside the two baking ovens, shielding plates thermally shielding the lower baking oven from the upper baking oven and from said cooling-air channels, said cooling-air inlet opening being located at a lower limit of the housing below the lower baking oven and below a shielding plate associated therewith, said cooling-air outlet opening as well as a blower being connected to a common exhaust channel disposed above the upper baking oven drawing air from said cooling-air inlet opening in the form of a first ventilating system, the upper baking oven being a microwave oven, and including a microwave generator with a blower therefor disposed in the upper space in the housing in addition to said blower connected to said exhaust channel, said blower associated with said microwave generator having a suction port disposed in direct vicinity of an additional cooling-air inlet opening of the housing and having an outlet port being in communication with said common exhaust channel through said microwave oven forming a second ventilating system, said suction port being disposed between said microwave oven and said additional cooling-air inlet opening for receiving air before it reaches said microwave oven.



4,354,085
PIPE WELDER WITH IMPROVED SEAM SPREADER

Kenneth E. George, Jr., McKeesport, and Douglas E. Alexander, North Huntingdon, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 220,552
Int. Cl.³ B23K *9/32*
U.S. Cl. 219—59.1 **4 Claims**



1. In pipe seam welding apparatus, said apparatus including at least one weld head for joining opposite edges of the seam, an arbor having opposed faces against which opposite of the seam edges may be abutted to properly align them as they are closed preparatory to welding, a conveyor for transporting the pipe longitudinally onto the arbor, means for axially rotating the pipe prior to transport so as to properly align the seam edges with respect to the opposite faces of the arbor, and means for spreading the seam sufficiently to permit passage of the edges thereof onto the arbor, said spreader means including an elongated arm fixed in position adjacent but outward of an entry end of said arbor and extending axially in a transverse direction across the mid-point of the interior cross section of the pipe, and frictionless rollers mounted on opposite ends of the arm for contacting the interior pipe wall so as to spread the seam as the pipe is rolled thereover onto the arbor,

the improvement in said spreader means which comprises:

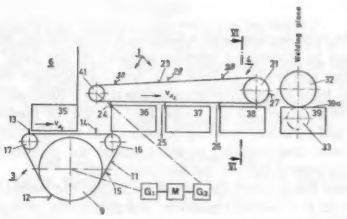
at least one fluid powered cylinder substituted axially for at least part of the length of said arm;

a bracket housing said cylinder, said cylinder being axially slidable back and forth therein so that equal forces are exerted against the pipe, thus preventing displacement of the seam from proper alignment with the arbor during spreading.

4,354,086
AUTOMATED CAN RESISTANCE WELDER

Paul Opprecht, Im hinteren Bernold, 8962 Bergdietikon, Switzerland

Continuation of Ser. No. 905,477, May 12, 1978, abandoned.
This application Oct. 29, 1979, Ser. No. 89,209
Claims priority, application Switzerland, Jun. 10, 1977, 7143/77
Int. Cl.³ B23K *11/16*
U.S. Cl. 219—64 **21 Claims**



1. A can body automated resistance welding machine, comprising:

means defining a roll former station for rolling blanks into can bodies moving in a predetermined direction of travel;

means defining a welding station including a pair of welding electrode rolls arranged downstream with regard to the direction of travel of the can bodies for welding the rolled can bodies;

two successively arranged driven transport systems defining first and second transport systems;

each of said transport systems comprising at least one endless revolving chain equipped with spaced entrainment members for engagement of the can bodies, the chain of the first transport system defining a first chain and the chain of the second transport system defining a second chain;

means mounting said first chain so as to pass through the roll former station;

first driving means for driving said first chain at a varying velocity represented by a first cyclic velocity curve such that said first chain periodically remains at least approximately stationary with a substantially zero velocity; and

second driving means for driving said second chain at a substantially sinusoidal velocity represented by a second, substantially sinusoidal velocity curve, said first and second velocity curves having a predetermined phase relationship whereby the rolled can bodies are transferred from the first chain to the second chain and experience a movement which is stabilizing for the can bodies.

4,354,087

WELDING POWDER FEED DEVICE

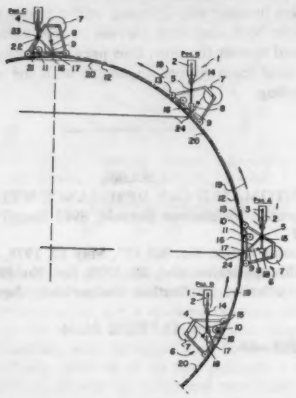
Hermann Osterlitz, Lengede, Fed. Rep. of Germany, assignor to Salzgitter AG, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,210

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936590

Int. Cl.³ B23K *9/18*

U.S. Cl. 219—73.2 13 Claims



1. In combination with a welding tractor for arc welding on vertical to horizontal curved surfaces of the type having a welding electrode, at least one welding powder vessel, and supply lines for powder application upon a weld zone and for covering the arc, an improved feed device for feeding granulated and powdery welding powders and additives comprising

at least one welding powder vessel for pivoting about a horizontal axis on the welding tractor,

means for holding the vessel such that the vessel is always held in a vertical position, independently of the angle of inclination of the welding tractor moving over the curved surfaces;

a supply conduit pivotably mounted on each welding powder vessel, a powder applicator in communication with said supply conduit for receiving welding powder, and surrounding said powder applicator being rigidly arrangd on the welding tractor and surrounding the welding electrode for applying the powder upon the weld area.

4,354,088

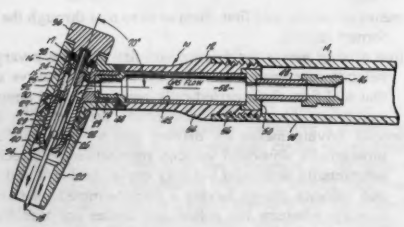
GAS SHIELDED WELDING TORCH

Richard B. Rehrig, 2812 Haven Way, Burbank, Calif. 91504

Continuation of Ser. No. 897,376, Apr. 18, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 161,736

Int. Cl.³ B23K *9/16*

U.S. Cl. 219—75 5 Claims



1. A welding torch of the gas shielded type comprising a body portion, a head portion threadably connected to said body portion and an electrode assembly carried by said head portion, said body portion having a central flow through conduit, a gas inlet in electrical and fluid communication with one end of said conduit and being adapted to be communicated with a supply of pressurized shielding gas, a gas outlet secured to the other end of said conduit in electrical and fluid communication therewith and defining threaded attachment means therein, said head portion including a central hollow tubular member defining a threaded bore portion for the mounting of said electrode assembly therein and a hollow threaded tubular connector portion extending radially from said bore portion, said connector portion being axially aligned with and threadably engaged with said attachment means on said gas outlet in electrical and fluid communication therewith and defining the sole electrical connection and physical securement between said head portion and said body portion such that said head portion can be threadably detached intact from said body portion by relative rotation between said head and body portions and a nozzle carried by said head portion for directing the flow of gas therefrom.

4,354,089

WELDING APPARATUS WITH FORWARD SHIFTABLE ELECTRODE TABLES

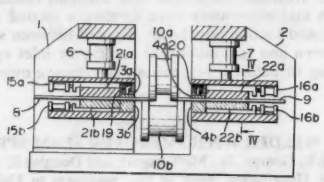
Hisashi Takahashi; Takao Kawanami, both of Tohkai; Keiji Sodeno, and Toshihiko Baba, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Continuation of Ser. No. 923,224, Jul. 10, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,198

Claims priority, application Japan, Jul. 12, 1977, 52-83457

Int. Cl.³ B23K *11/04*

U.S. Cl. 219—97 5 Claims



1. A welding apparatus which comprises:

a pair of clamping devices for clamping workpieces disposed with a specific gap and for shifting the workpieces to butt them in the welding operation; said specific gap being formed from a projecting portion extending outwardly from each of said workpieces and in the butting direction; said clamping devices remaining clamped onto said workpieces when the ends thereof are sheared by a shearing means to form said specific gap and throughout the remainder of said welding operation;

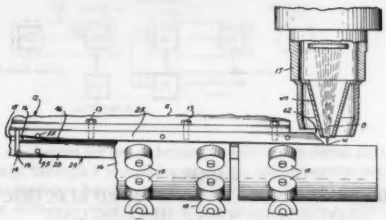
a pair of electrode tables which are respectively disposed in front of each of the clamping devices in the butting direction to feed a welding current through the workpieces when the workpieces are in a butting condition, said electrode tables being shifted relative to the clamping devices in the butting direction for the workpieces to adjust the distance between said electrode tables after the ends of the workpieces are sheared and to thereby reduce the length of said specific gap, and the clamping devices being more massive than the electrode tables to bear the greater part of the forces during the welding operation; said workpieces remaining stationary during the shifting movement of said electrode tables because of the clamping force of said pair of clamping devices, whereby the welding time period is reduced by eliminating a substantial amount of mechanical movement from the welding operation.

4,354,090

Z-BAR GUIDE APPARATUS AND METHOD OF BUTT WELDING

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.

Continuation-in-part of Ser. No. 88,197, Oct. 23, 1979, Pat. No. 4,272,004. This application Feb. 10, 1981, Ser. No. 233,251
The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC 25 Claims



1. A Z-Bar apparatus for guiding the edges of sheet material into intimate abutting edge-to-edge relationship with each other as the material is being moved to a welding zone adjacent thereto, comprising a Z-Bar having inlet and discharge ends, an elongated central guide member and elongated upper and lower guide bar means, said upper and lower guide bar means having first and second ends, said central guide member including upper and lower vertically offset portions connected by a generally vertically disposed interface, said offset portions having generally vertically aligned walls on opposite sides of said interface, means for mounting said upper and lower guide bar means on said walls of said upper and lower portions of said central guide member, respectively, said second ends of said upper and lower portions of said central guide member and said second ends of each of said upper and lower guide bars extending toward a welding apparatus, a first channel formed between said lower portion of said central guide member and said upper guide bar means, a second channel formed between said upper portion of said central guide member and said lower guide bar means, said first and second channels being in vertically spaced relationship with one another along at least a portion of the length of said central guide member and being of a size to slidably receive and guide the edges of the sheet material, at least one of said channels tapering relative to the other along its length so that said channels progressively converge vertically relative toward one another along said central guide member, said vertical interface between said upper and lower portions of said central guide member being continuously reduced in dimension along its length and terminating at a point spaced from said discharge end of said Z-Bar, said first and second channels converging into open communication along the length of said Z-Bar between said point at which said interface terminates and said discharge end of said Z-Bar so that the edges of the sheet material are brought into abutting edge-to-edge engagement within said Z-Bar, whereby the edges of the sheet material are in substantially abutting edge-to-edge engagement with one another as the sheet material is discharged from the Z-Bar apparatus into the welding zone.

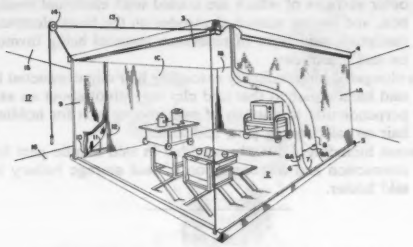
4,354,091

PORTABLE AUXILIARY WARMING ROOM APPARATUS

Claud N. Bain, 2846 Maple La., Fairfax, Va. 22030

Filed May 9, 1980, Ser. No. 148,442
Int. Cl.³ H05B *3/66*
U.S. Cl. 219—213 26 Claims

1. Portable auxiliary warming room apparatus comprising a frame for attachment to a fixed ceiling of a fixed room in a building, the frame being widely spaced from at least some of the fixed walls of the fixed room, electric blanket-like material flexible heating walls connected to the frame and hanging downward from the frame to a fixed floor of the fixed room, flexible heating means within the flexible walls, the flexible walls thus confining an auxiliary warming room spaced within



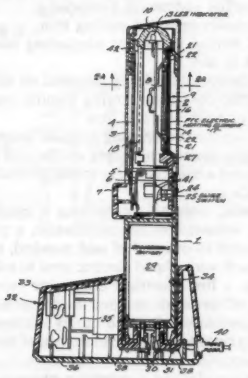
the fixed room, the flexible walls further defining an engress and egress opening for permitting passage of a person between the fixed room and the auxiliary room, and an electric blanket-like flexible material flap connected to the frame above the opening and hanging downward for closing the opening, whereby a portable warming room with flexible heating walls is constructed within a fixed room of a building.

4,354,092

ELECTRIC HAIR CURLING IRON WITH RECHARGEABLE BATTERY POWER SUPPLY

Keiji Manabe, Neyagawa; Tadanori Kawamura, Katano; Masao Fukunaga, Matsubara; Takeo Nishida, Osaka; Seishi Terakado, Toyonaka, and Toshiaki Nagakoshi, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 28, 1979, Ser. No. 80,773
Claims priority, application Japan, Oct. 5, 1978, 53-123162
Int. Cl.³ A45D *1/04;* H05B *1/02, 3/10*
U.S. Cl. 219—225 12 Claims



1. An electric hair iron comprising an elongated electrically heated ironing part for ironing the hair, said ironing part being disposed at the end of a handle part for manipulation of said ironing part,

characterized in that said handle part contains

a rechargeable storage battery therein and has electrical connecting means for electrically connecting said storage battery to a battery charger,

said ironing part comprising

an electric sheet heater of elongated tubular shape, said sheet heater including a layer of resistance material exhibiting a positive temperature coefficient of resistance whereby the temperature of the ironing part is automatically regulated, said tubular sheet heater forming the outside hair contacting surface of the ironing part, wherein said tubular sheet heater comprises a tubular metal substrate, the inner and outer surfaces of which are coated with electrical insulation, and having spaced electrodes on the inner electrical insulation, said layer of resistance material being formed on said electrodes,

an elongated longitudinally extending hair clip connected to said handle part so that said clip may pivot about an axis perpendicular to the axis of said ironing part for holding hair on said ironing part, and

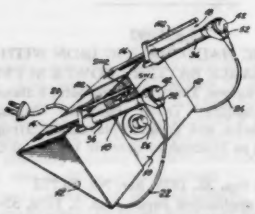
means including a switch provided in said handle part for connection and disconnection of said storage battery to said heater.

4,354,093

ELECTRICALLY HEATED HAIR CURLING INSTRUMENT AND TEMPERATURE CONTROL STAND THEREFORE

Jean-Claude Zago, 6286 Belleau St., Montreal, Quebec, Canada (H1P 1H6)

Filed May 19, 1980, Ser. No. 151,279
Int. Cl.³ H05B *1/02;* A45D *1/04, 2/36*
U.S. Cl. 219—225 **6 Claims**



1. A hair curling instrument comprising:

(a) an electrically-operated curling iron;

(b) a stand having means for supporting said curling iron when not in use;

(c) a temperature control box mounted on said stand;

(d) an electric cord for carrying electric power from the control box to the curling iron;

(e) said curling iron comprising a handle assembly, a detachable heating element mounted on the end of said handle assembly and a hair-clamping means pivotally mounted on said handle assembly;

(f) said handle assembly comprising a handle, a mandrel rotatably mounted within said handle, a plurality of slip rings secured to one end of said mandrel, means for connecting each wire of said electric cord to a different one of said rings, a first electrical connector member having a plurality of terminals secured to the other end of said mandrel, and means for electrically interconnecting each of said slip rings to a different terminal of said first connector member;

(g) said heating element comprising an open-ended hollow mandrel, two longitudinally-spaced heating coils electrically connected in series and mounted on said hollow mandrel, an outer heat-conducting tube covering said coils and having a closed end, a thermistor mounted on said mandrel between said heating coils and contacting the inside of said heat-conducting tube for measuring the temperature of said tube, a second electrical connector member having a plurality of terminals corresponding to the terminals of said first connector member and secured to the other end of said outer tube means for interconnecting said heating coils and said thermistor to different terminals of said second connector member, said second connector member having its terminals removably coupled to the corresponding terminals of said first connector member carried by said handle assembly;

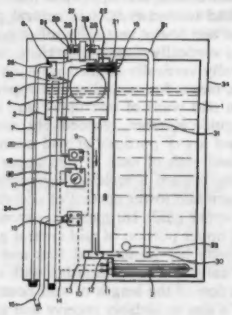
(h) and a manually-adjustable temperature control circuit located in said control box, connected to said thermistor through wires of said power cord, said slip rings and first and second connector members and responsive to the temperature of the curling iron as measured by said thermistor for controlling the de-energization of the curling iron, depending on the type of hair being curled.

4,354,094

THERMOSTATICALLY CONTROLLED ELECTRIC CONTINUOUS WATER HEATING UNIT

Raymond D. Massey, Cambridge Park, and Leonard Newsam, Dulwich Hill, both of Australia, assignors to Zip Heaters (Aust.) Pty. Limited, New South Wales, Australia

Filed Nov. 12, 1980, Ser. No. 206,224
Int. Cl.³ H05B *1/02;* F24H *1/20*
U.S. Cl. 219—306 **7 Claims**

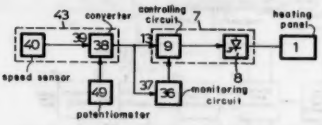


1. A continuous water heating unit comprising: a water heating tank containing an electric heating element near the bottom of said tank; a level control tank mounted alongside said heating tank, said level control tank incorporating a float actuable valve connected to a supply of water and arranged to maintain water in said level control tank within predetermined maximum and minimum level limits; a draw-off connection from said heating tank; a controlled flow connection between said level control tank and said water heating tank arranged to allow water to pass from said level control tank to said water heating tank at a controlled rate substantially equal to the boiling water heating rate of said element; a conduit communicating between said water heating tank and said level control tank above the maximum water level in said tanks; and a temperature control device including a temperature sensitive probe which is at least partially mounted in said conduit and is substantially surrounded by a gauze tube so as to direct steam from said water heating tank over said probe; said temperature control device being responsive to the temperature of water in said tank for supplying electricity to said heating element when the temperature of the water in said water heating tank is below boiling point and to cut the supply of electricity to said element when the temperature of the water in said water heating tank reaches boiling point.

4,354,095
INFRARED HEATING APPARATUS FOR HEATING WEB-LIKE MATERIAL

Jacob de Vries, Insulindeweg 10, 1462 MJ Middenbeemster, Netherlands

Filed Nov. 26, 1980, Ser. No. 210,382
Claims priority, application Netherlands, Apr. 2, 1980, 8001944
Int. Cl.³ H05B 1/02
U.S. Cl. 219—388 **6 Claims**



1. Apparatus for use in heating a web-like material during its passage through a processing machine, said apparatus comprising at least one heating panel which faces a path of travel taken by a web-like material when passing through a processing machine, said panel is equipped with at least one short-to-medium-wave infrared-radiation producing element, a controlling circuit having means for varying the heat emission of the heating panel as a function of the magnitude of a control signal, a control means providing an output to the controlling circuit of the control signal, said control means comprising a sensor generating a signal corresponding to the rate of passage thereby of web-like material which signal is supplied to a first input of a control circuit, and a second input of the control circuit to which a manually operable adjusting device is connected for adjusting the rate of change of the control signal as a function of the signal corresponding to the rate of passage of web-like material.

4,354,096
HEATING ELEMENTS AND THERMOSTATS FOR USE IN THE BREEDING OF FISH FOR AQUARIA

Jean Claude Dumas, Auriol, France, assignor to Gloria S.A., Paris, France

Filed Jan. 28, 1981, Ser. No. 229,721
Claims priority, application France, Jan. 29, 1980, 80 01875
Int. Cl.³ H05B 3/36
U.S. Cl. 219—523 **9 Claims**

1. In an electrical heating element useable in an aquarium, the improvement which comprises an electrical resistance containing conductive particles mixed with a hydrocarbonic polymer, said resistance having been shaped and subjected to a controlled thermal action to obtain a given electrical conduction of said mixture of conductive particles and polymer; and a coating of an electrically insulating material disposed in surrounding relation to said electrical resistance, said insulating material being a thermoplastic material which is heat-conductive and defines a waterproof and moldable coating.

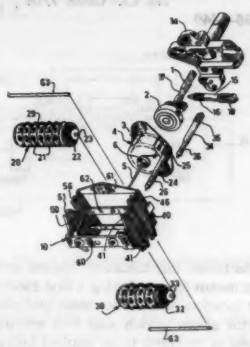
4,354,097
ODOMETERS

Jean Menager, Luxembourg, Luxembourg, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

Filed Jul. 16, 1979, Ser. No. 57,889
Claims priority, application France, Jul. 20, 1978, 78 21522; Dec. 8, 1978, 78 34701
Int. Cl.³ G01C 22/00
U.S. Cl. 235—96 **5 Claims**

1. An odometer for displaying the speed of a vehicle and the distance travelled, comprising an input shaft driven at a speed proportional to that of the vehicle, a speedometer unit connected to the input shaft, a mileage recording unit comprising a plurality of graduated drums mounted side by side on a common shaft and driven from the input shaft, a plurality of radially projecting stop lugs, and a frame for supporting said unit in rotation, characterized in that:

(a) the frame comprises two parallel walls provided with recesses for receiving the respective ends of the shaft of the mileage recording unit,



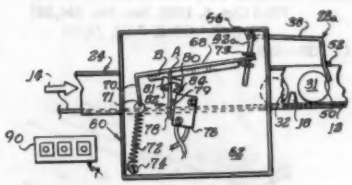
(b) wherein the frame comprises a bar extending between said walls parallel to said common shaft and providing stop means for the projecting stop lugs, and

(c) a locking element associated with the bar for immobilizing the stop lugs in their stop position, said element being force-fitted in recesses formed in said walls of the frame substantially in the plane of the bar.

4,354,098
EGG COUNTER

William Peppler, Athens, Ga., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Nov. 3, 1981, Ser. No. 318,075
Int. Cl.³ G06M 7/00
U.S. Cl. 235—98 B **16 Claims**



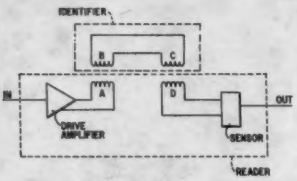
1. A counting apparatus comprising: signalling means for producing a detectable signal in response to passage of at least a portion of an object past a predetermined part of a predetermined path of travel, said signalling means being responsive to objects at least a portion of which is of a size over a predetermined range of sizes, and resetting means for resetting said signalling means following the production of each signal thereby so as to enable production of a further signal thereby in response to passage of a subsequent object past said predetermined part of said path of travel, said resetting means being responsive to a predetermined minimum incremental decrease in the size of the portion of said object at said predetermined part of said path of travel for resetting said signalling means, without regard for the actual size of the object or any portion thereof within said range of sizes.

4,354,099

ELECTRONIC IDENTIFICATION SYSTEM

David J. Rayment, Surrey, and Hendrik R. Kruger, Richmond, both of Canada, assignors to Computrol Systems, Ltd., Vancouver, Canada

Filed Jun. 20, 1980, Ser. No. 161,515
Int. Cl.[3] G06K 7/08
U.S. Cl. 235—449 12 Claims



1. An electronic identification system, comprising:

(a) drive means for producing a first electromagnetic field at a first location, said drive means including a first electrical inductor about which said first electromagnetic field is induced in response to an applied current;

(b) detector means for producing an output signal upon detection of a second electromagnetic field at a second location where said first electromagnetic field has a negligible effect upon said detector means, said detector means including a second electrical inductor in which said output signal is induced when said second electromagnetic field surrounds said second inductor; and,

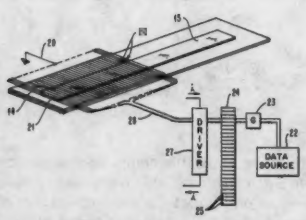
(c) identifier means for sensing said first electromagnetic field and for producing said second electromagnetic field in response to sensing of said first electromagnetic field, said identifier means including a third electrical inductor and a fourth electrical inductor connected in series with said third electrical inductor, and said identifier means being physically separable from said drive means and from said detector means.

4,354,100

SCANNABLE READOUT DEVICE

James E. Rohen, Mint Hill, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,207
Int. Cl.[3] G06K 7/08, 19/06
U.S. Cl. 235—449 6 Claims



1. A scannable readout device for presenting data from a source in a form to be scanned by a magnetic hand-scanning device and wherein the improvement comprises

an elongated data transfer track portion comprising, along its length, a plurality of transversely oriented electrical conductors, and

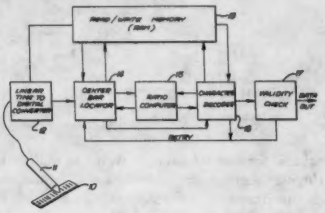
driver circuit means responsive to data from said source and connected to said conductors for selectively applying current thereto in one direction or the other to provide a controlled flux pattern for scanning in sequence by said scanning device.

4,354,101

METHOD AND APPARATUS FOR READING AND DECODING A HIGH DENSITY LINEAR BAR CODE

Gerald P. Hester, Santa Ana, and Paul Sherer, Costa Mesa, both of Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.

Continuation of Ser. No. 13,804, Feb. 21, 1979, which is a continuation of Ser. No. 787,855, Apr. 15, 1977, abandoned. This application Apr. 22, 1980, Ser. No. 142,776
Int. Cl.[3] G06K 7/10
U.S. Cl. 235—463 60 Claims



1. A method of reading a delta distance coded segment having coding modules of the type of the Universal Product Code including the steps of unambiguously decoding the information containing coding modules of the coded segment on the basis of measuring the relative widths of preselected coding modules exhibiting delta distance properties to obtain two primary ratios of the selected delta distances to thereby decode the segments, and

in the event a coded segment may not be unambiguously decoded by the first step, examining the ambiguously decoded segment for producing the ratio of the widths of a pair of preselected coding modules thereof that do not exhibit delta distance properties to define secondary ratios for unambiguously decoding the coded segment by the use of the two primary decoding ratios and one of the secondary ratios, the pair of preselected coding modules utilized in the second decoding step for defining a secondary ratio being selected from the coding modules utilized for the first decoding step in defining one of the primary ratios on the basis of the width relationships of a preselected one of the two primary ratios resulting from the first decoding step.

4,354,102

CURSOR APPARATUS FOR INTERACTIVE GRAPHIC DISPLAY SYSTEM

Richard H. Burns, North Hollywood; Michael R. Smith, Thousand Oaks; Irving J. Bell, Canoga Park, and Kenneth Crabtree, Saugus, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 13, 1980, Ser. No. 206,414
Int. Cl.[3] G01J 1/20
U.S. Cl. 250—201 9 Claims

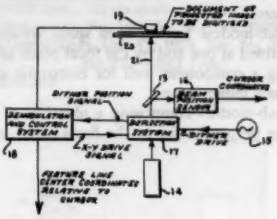
1. In an interactive graphic display system having a display screen with a projected or overlaid image, a steerable pointing laser, the beam thereof adapted to scanning said screen in response to a laser beam deflecton circuit, and laser beam position sensing and indicating means, the improvement residing in an interactive cursor system, said interactive cursor system comprising:

dither means for dithering said laser beam uniformly about its average position in discrete dither pattern,

a cursor element moveably positionable on the surface of said screen in intercepting relationship with said laser beam, said cursor element including laser beam detecting means, said laser beam detecting means having a geometric configuration functionally related to said dither pattern

and producing a modulated output signal responsive to the direction and magnitude of any misalignment of the dither pattern therewith,

a demodulation circuit processing said modulated output



signal and providing direction and magnitude error signals therefrom, and

a control circuit receiving said direction and magnitude error signals and centering said laser beam on said cursor element in response thereto.

4,354,103

OPTICAL FOCUSING DEVICE WITH TWO CONTROLS

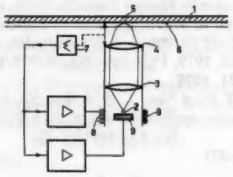
Kornelis A. Immink; Martinus P. M. Bierhoff, and Jacobus P. J. Heemskerk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,117

Claims priority, application Netherlands, Jun. 27, 1980, 8003729

Int. Cl.³ G11B *7/08*

U.S. Cl. 250—201 **4 Claims**



1. An optical focusing device, comprising a radiation source, focusing means for focusing the radiation from the radiation source onto an object, detection means for detecting the focusing error and control means, which move the radiation source and/or the focusing means, or at least parts thereof, relative to the object so as to reduce the focusing error, which control means act both on a first part, which can be moved with a speed smaller than that corresponding to the desired control frequency of the device, and on a second part, which can be moved substantially faster than the first part, characterized in that the focusing error detection means direct a radiation beam along an optical path, which is substantially unaffected by displacements of the second part of the control means, and that the control signal thus generated by said detection means is applied to said first part in the sense of a negative feedback but to the second part of the control means in the sense of a forward control.

4,354,104

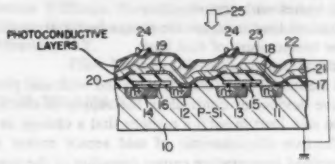
SOLID-STATE IMAGE PICKUP DEVICE

Takao Chikamura, Osaka; Shinji Fujiwara, Minoo, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 6, 1980, Ser. No. 147,276

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **7 Claims**



1. A solid-state image pickup device characterized by the provision of

(a) a substrate,

(b) at least two or more first electrodes of unit cells which are formed on said substrate and electrically isolated from each other,

(c) a photoconductive layer formed over said substrate and over said first electrodes,

(d) a second electrode formed over said photoconductive layer, and

(e) light shielding means formed above said substrate upon which falls the incident light.

4,354,105

CONTROL SYSTEM INCLUDING A TEMPERATURE-RESPONSIVE VARIABLE OPTICAL PARAMETER SENSOR

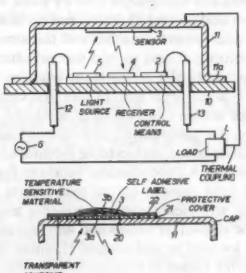
Ernst Spirig, P.O. Box 160, CH-8640 Rapperswil, Switzerland

Continuation of Ser. No. 58,118, Jul. 16, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,269

Claims priority, application United Kingdom, Jun. 21, 1979, 7921635

Int. Cl.³ G01J *5/28;* G01K *11/12;* G01D *5/30*

U.S. Cl. 250—231 R **6 Claims**



1. An electronic fuse, comprising

(a) a casing containing a chamber, and a window opening (20) communicating with said chamber;

(b) a semiconductor circuit mounted in said chamber, said circuit including a light-emitting device (5) and a photoresponsive device (4);

(c) a temperature sensor means removably mounted on the external surface of said casing opposite said window opening,

(1) said sensor means including

(a) a self-adhesive label layer (3) mounted over said window, said label layer containing a transparent second opening (*3a*); and

(b) a temperature-sensitive element (*3b*) mounted opposite said second opening;

(2) said sensor means being arranged to receive light radiated to it from said light emitting device and to reflect said light to said photo-responsive device, said sensor means having a light-reflective characteristic which varies with temperature;

(d) an electrical load, said sensor means being arranged to sense the temperature of said load;

(e) a source of electrical power; and

(f) control means (2) electrically connected with said photo-responsive device for controlling the supply of electrical power to said load in such a manner that a change in the light-reflective characteristic of said sensor means at a predetermined temperature causes cessation of the supply of electrical power to the load.

4,354,106

LIGHT BARRIER APPARATUS

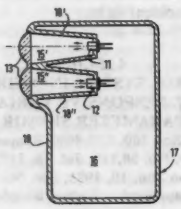
Arthur Walter, Waldkirch, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,236

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2910064

Int. Cl.³ G01D *21/04*

U.S. Cl. 250—239 **16 Claims**



1. Light barrier apparatus comprising a housing having at least first and second chambers and a removable cover plate with said first chamber being separated by fixed wall means of said housing from said second chamber and hermetically sealed relative to both said second chamber and the atmosphere, said cover plate permitting access to said second chamber but not said first chamber; optically transparent window means defining at least part of an external wall of said first chamber; photoelectric converter means comprising at least one of a photoelectric transmitter for generating a first beam of light for subsequent propagation across a region to be monitored by said light barrier apparatus and a photoelectric receiver for receiving a second beam of light passing across said region to said light barrier apparatus and electronic components associated with said photoelectric converter means and wherein said electronic components are located in said second chamber and said photoelectric converter means is located in said first chamber.

4,354,107

DETECTOR ARRAY MODULE-STRUCTURE AND FABRICATION

John C. Carson, Corona Del Mar, and Paul F. Dahlgren, Newport Beach, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Division of Ser. No. 855,242, Nov. 28, 1977, Pat. No. 4,304,624. This application Nov. 14, 1980, Ser. No. 206,994

Int. Cl.³ H01J *5/02*

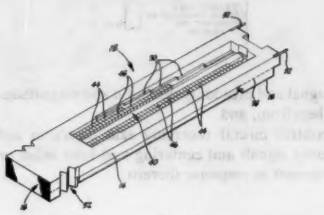
U.S. Cl. 250—239 **5 Claims**

1. A photo-detector mosaic array module one end of which provides a detector-element mosaic area located on the focal plane of the detector array, which module comprises:

a first sub-module comprising a plurality of thin layers extending perpendicular to the focal plane and secured together, with detector-connected lead circuitry between such layers;

said first sub-module having open space within the cubic space defined at one end by the focal plane area, thereby providing a component well for electronic components within such cubic space;

a second sub-module comprising a plurality of thin layers extending perpendicular to the focal plane and secured



together, with detector-connected lead circuitry between such layers;

said second sub-module having open space within the cubic space defined at one end by the focal plane area, thereby providing a component well for the electronic components within such cubic space;

said first and second sub-modules being secured together to form the module;

a first set of electrical components located within the component well provided in the first sub-module; and

a second set of electronic components located within the component well provided in the second sub-module.

4,354,108

ATOMIC BEAM DEVICE

Jiro Toyama, Akashi; Hiromi Takaoka, Kobe, and Kyoji Kariya, Kakogawa, all of Japan, assignors to Fujitsu Limited, Japan

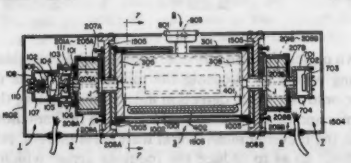
PCT No. PCT/JP78/00018, § 371 Date Jul. 8, 1979, § 102(e) Date Jun. 25, 1979, PCT Pub. No. WO79/00281, PCT Pub. Date May 31, 1979

PCT Filed Nov. 2, 1978, Ser. No. 112,632

Claims priority, application Japan, Nov. 8, 1977, 52-1343390

Int. Cl.³ H01S *1/00*

U.S. Cl. 250—251 **6 Claims**

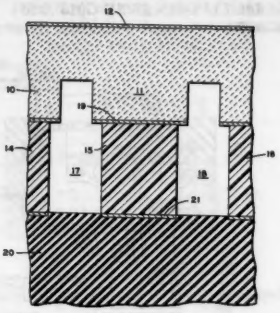


1. An atomic beam device of the type including a first state selection magnet part; a high frequency transition part; and a second state selection magnet part sequentially arranged along an atomic beam path in a vacuum envelope extending from an atomic beam generator to a detector, wherein the improvement comprises: said high frequency transition part comprises a rigid metal block forming a portion of the vacuum envelope, and said first and second state selection magnet parts are coaxially supported by said metal block at either end thereof.

4,354,109
MOUNTING FOR PYROELECTRIC DETECCTOR ARRAYS

William J. White, Chelmsford; Jeffrey C. Gelpeg, Peabody; Donald E. Marshall, Jr., Harvard, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 108,759, Dec. 31, 1979, abandoned.
This application Apr. 17, 1981, Ser. No. 254,845
Int. Cl.³ G01J 1/00
U.S. Cl. 250—349 9 Claims

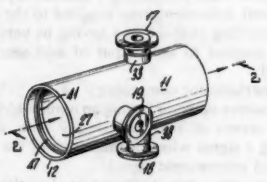


1. Apparatus for processing infrared signals, comprising:
a pyroelectric detector array including a plurality of detector elements;
a plurality of electrically conductive epoxy polymer mounting means having two ends and attached at one end to said array to provide individual electrical contact for each of said detector elements;
circuit means attached to the other end of said mounting means for processing electrical signals from said array; and
means included in said mounting means for providing electrical conductivity between said array and said circuit means sufficient to enable the interoperation thereof while in addition providing thermal isolation so that said array has an improved thermal responsivity.

4,354,110
CHAMBER FOR MEASURING GAMMA RAY EMISSIONS

Albert P. Richter, Jr., Houston, and Ronald L. Campsey, Alief, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,748
Int. Cl.³ G01N 23/00
U.S. Cl. 250—358.1 4 Claims

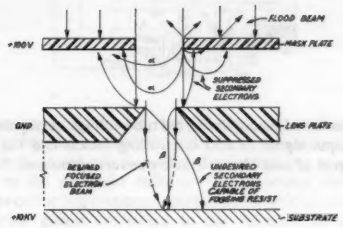


1. In combination with a chamber for making measurements using irradiation with neutrons and gamma radiation emissions detection, said chamber having iron walls for containing a fluid to be measured, the improvement comprising
cross pipe means comprising a pair of diametrically extending pipes for locating a neutron source and a detector in said fluid,
said pipes being perpendicular to one another and spaced apart to permit said fluid to be measured to flow in between,
said cross pipe means having iron walls, and
means for covering all said iron walls with a layer of boron carbide-epoxy mixture covered by epoxy-glass.

4,354,111
SCREEN LENS ARRAY SYSTEM

Norman Williams, New Hope, Pa., and George R. Koch, Los Altos, Calif., assignors to Veeco Instruments Incorporated, Melville, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,391
Int. Cl.³ H01J 37/00
U.S. Cl. 250—396 R 19 Claims



1. A screen lens array system comprising:
a. a first plate having a first and second group of apertures therein;
b. a second plate having a first and second group of apertures therein;
c. said first plate and said second plate being maintained at different potentials in a predetermined spaced-apart relationship;
d. wherein the first group of apertures in said first and second plates are normally aligned and the second group of apertures in said first and second plates are normally misaligned; and
e. said first and second plates being capable of relative movement therebetween to cause said normally aligned apertures in said first and second plates to become misaligned and said normally misaligned apertures in said first and second plates to become aligned.

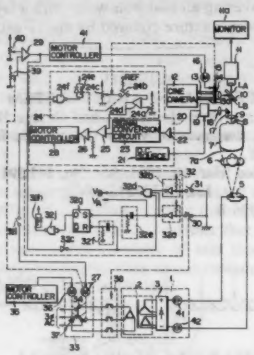
4,354,112
X-RAY CINE RADIOGRAPHY APPARATUS

Kosaku Nishio, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 28, 1980, Ser. No. 211,439
Int. Cl.³ H05G 1/30
U.S. Cl. 378—99 3 Claims

1. An X-ray cine radiography apparatus comprising:
X-ray tube means for radiating X-rays toward an object under examination;
means for converting the X-rays transmitted through the object into a visual image;
cine camera means for picking up the visual image;
photoelectric converting means for detecting a brightness of the visual image to produce an electric signal;
means for setting an upper limit tube voltage of said X-ray tube means;
means for detecting a signal corresponding to an actual tube voltage of said X-ray tube means;
means for comparing the output signal of said tube voltage detecting means with that of said setting means and for producing an enabling signal when the former recited output signal exceeds the latter recited output signal;
means for controlling quantity of light of the visual image

picked up by said cine camera means in accordance with the enabling signal of said comparing means, and



means for adjusting the actual tube voltage in response to the output signal of said controlling means and the electric signal of said photoelectric converting means.

4,354,113

ION SOURCES

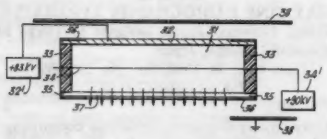
Philip D. Goode, Didcot; Michael J. Poole, Abingdon, and Gordon W. Proctor, Didcot, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation-in-part of Ser. No. 23,745, Mar. 26, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,308

Claims priority, application United Kingdom, Apr. 5, 1978, 13310/78

Int. Cl.³ H01J *27/00*

U.S. Cl. 250—423 R **10 Claims**



1. An ion source comprising a chamber including an electrically conducting cylindrical tube having a longitudinal exit slit formed therein, the thickness of the wall of the chamber being sufficient to ensure that, in use, there is a substantially electric field free region within the exit slit, two parallel anode wires extending the length of the chamber in the central region thereof and being symmetrically disposed with respect to the longitudinal axis of the chamber and the exit slit, and a mask positioned at each end of the exit slit so as to have an edge in the electric field free region within the exit slit, the separation of the opposing edges of the masks defining the width of the ion beam emitted by the source.

4,354,114

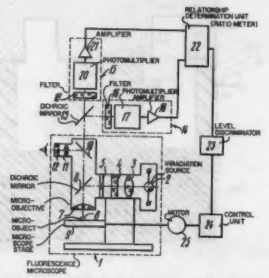
APPARATUS FOR INVESTIGATION OF FLUORESCENCE CHARACTERISTICS OF MICROSCOPIC OBJECTS

Valery N. Karnaukhov, mikroraion "AB", dom 7, kv. 67; Valery A. Yashin, mikroraion "AB", dom 6, kv. 100; Vladimir I. Kulakov, mikroraion "V", dom 26, kv. 30; Vasily M. Vershinin, mikroraion "AB", dom 3, kv. 52, and Vladimir V. Dudarev, mikroraion "G", dom 26, kv. 75, all of Puschino Moskovskoi oblasti, U.S.S.R.

Filed Oct. 9, 1979, Ser. No. 82,809

Int. Cl.³ G01N *21/38*; G01J *1/58*

U.S. Cl. 250—458.1 **3 Claims**



1. Apparatus for investigation of fluorescence characteristics of microscopic objects and for distinguishing between modified and unmodified objects, comprising:

a fluorescence microscope having an amplitude modulated irradiation source and a movable stage which carries a microscopic object emitting fluorescent radiation under the action of said irradiation source;

a beam-splitting plate having an interference coating, adapted to reflect a short-wave component of said fluorescent radiation and to pass a long-wave component of said fluorescent radiation, said plate being located in the path of said fluorescent radiation;

a first recording channel to register a respective component of said fluorescent radiation from said microscopic object said channel being located in the path of the fluorescent radiation reflected from said beam-splitting plate, said channel having an output;

a second recording channel to register a corresponding component of said fluorescent radiation, said channel being located in the path of said fluorescent radiation passed by said beam-splitting plate, said channel having an output;

means for determining a relationship between said components, said means comprising a cathode-ray tube having its horizontal deflection plates coupled to the output of said first recording channel, and having its vertical deflection plates coupled to the output of said second recording channel;

a level discriminator comprising

a light-sensitive detector having an input which is connected to the screen of said cathode-ray tube, and an output forming a signal which is indicative of the presence of a modified microscopic object;

said light-sensitive detector being fixed on the screen of said cathode-ray tube in a movable relation to said screen at a point which determines the boundary of presence of modified microscopic objects when the detector is intersected with a luminous line corresponding to said relationship between said components of said fluorescent radiation from the object;

a control unit having an input and an output, whose input is coupled to the output of said light-sensitive detector;

means for stopping said stage in compliance with a signal

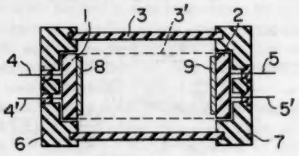
from said control unit when a modified object is detected, said means comprising an electric motor having an input coupled to the output of said control unit and an output coupled to said stage.

4,354,115

PHOTOCOUPLING DEVICE

Terunori Warabisako, Tokyo, and Shigeo Shiono, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,125
Claims priority, application Japan, Nov. 30, 1979, 54-154380
Int. Cl.³ H01L *31/16, 31/04*
U.S. Cl. 250—551 **14 Claims**



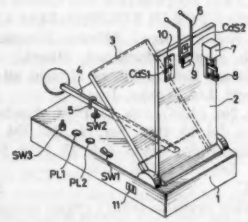
1. A photo-coupler for electricity-light-electricity conversion comprising:
(1) a light emitting part;
(2) a photosensing device comprising a plurality of photosensing elements electrically connected in series in a light receiving surface of an insulating substrate, said photosensing elements being radially arrayed in said light receiving surface; and
(3) a light guiding means optically coupling said light emitting part and said photosensing device,
whereby light is emitted from said light emitting part and directed through said light guiding means to said photosensing device to generate a photoelectric conversion output.

4,354,116

AUTOMATIC ISOLATOR OF BLOOD PLASMA

Shinjiro Tsukamoto, No. 5-31, Utsubohonmachi 3-chome, Nishi-ku, Osaka, Osaka-fu, and Masahiro Ugawa, No. 10-12, Hanjo 2-chome, Minoo, Osaka-fu, both of Japan

Filed Sep. 11, 1980, Ser. No. 186,087
Claims priority, application Japan, Sep. 17, 1979, 54-119597
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—576 **4 Claims**



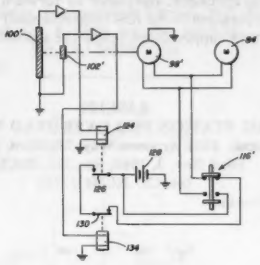
1. An isolator of blood plasma comprising a blood bag having an outlet tube, a photosensor for detecting the border between blood plasma and blood cells in said bag by the change of transmittance of visible light, and which have been separated by centrifugal apparatus, and means responsive to said photosensor for closing said tube so as to stop the outflow of blood plasma.

4,354,117

SOLAR ENERGY CONVERSION PLANT

Frank W. Abernathy, 1518 Riverbend Rd., Columbus, Ohio 43223

Filed Nov. 4, 1980, Ser. No. 204,071
Int. Cl.³ F03G *7/02*
U.S. Cl. 290—1 R **5 Claims**



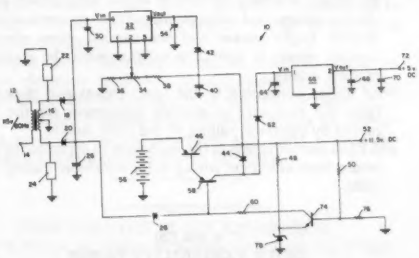
1. In a system for converting solar energy, a solar energy collector having a parabolic reflector concentrating solar radiation at a focal axis therein, and solar tracking means connected to the parabolic reflector for movement thereof to positions collecting maximum available solar energy, including servomotor means connected to the reflector for angular movement thereof about perpendicular axes substantially intersecting at said focal axis, the improvement comprising lens means for transmitting solar energy along a collimated beam movable about a fixed tracking axis, first cell means for generating signal energy in response to reception of said solar energy in all positions thereof, second cell means for generating signal energy in response to reception of said solar energy transmitted by the lens means in a tracking position, tracking motor means connected to the cell means for angular movement thereof about said tracking axis, and relay means connected to the cell means for controlling energization of the servomotor means in response to said generation of signal energy.

4,354,118

BATTERY BACKUP SUPPLY CONTROL MEANS AND METHOD

William H. Spencer, Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 30, 1981, Ser. No. 230,265
Int. Cl.³ H02J *9/00*
U.S. Cl. 307—66 **23 Claims**



1. An apparatus for automatically connecting and disconnecting a battery supply from an electrical load, the apparatus comprising:
first means for connecting the battery supply to the electrical load when the potential of a power source drops below a first predetermined value; and
second means for disconnecting the battery supply from the

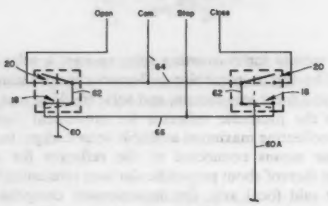
electrical load when the potential of the battery supply drops below a second predetermined value, including a first transistor having an emitter, base and collector, with the collector of the first transistor resistively connected to the first means, operative to provide a conductive path between the first means and ground potential when the base-emitter junction of the first transistor is forward biased and forward biasing means connected to the base of the first transistor, operative to forward bias the base-emitter junction of the first transistor until the potential of the battery supply drops below the second predetermined value.

4,354,119

CONTROL STATION FOR OVERHEAD MOUNTING

Neil J. Driscoll, 2456 Argonne Way, Medford, Oreg. 97501

Filed Nov. 3, 1980, Ser. No. 203,725
Int. Cl.³ H01H *17/26*
U.S. Cl. 307—115 **5 Claims**



1. In a control device for overhead mounting and operative to control related equipment,

an enclosure for the device and adapted to receive electrical wiring for connection to the device,

terminal block means fixedly mounted in the enclosure,

first stationary contact means on the terminal block means and second stationary contact means on the terminal block means spaced from the first stationary contact means,

first flexible electrical current conductive finger means carrying other electrical contact means in operative relation to said first stationary contact means,

second flexible electrical current conductive finger means carrying other electrical contact means in operative relation to said second stationary contact means,

bar means engaging the first flexible finger means and the second flexible finger means,

lever means pivotally movable relative to the enclosure and connected to the bar means intermediate the flexible finger means whereby movement of the lever means moves the bar means and induces concurrent movement of the flexible finger means and the carried other electrical contact means in operative relation with the stationary contact means,

cord means connected to the lever means and depending from the enclosure to provide movement for the lever means by operator pulling of the cord means,

and fixed barrier means in the enclosure to separate the lever means from electrical wiring in the enclosure during operation.

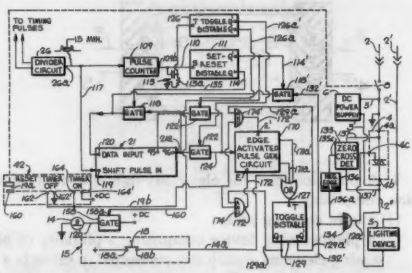
4,354,120

DAILY VARIABILITY TIMER

Louis W. Schornack, Niles, Ill., assignor to Dynascan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 22,453, Mar. 21, 1979. This application Apr. 16, 1981, Ser. No. 254,617
Int. Cl.³ H01H *43/06*; G04C *23/08*
U.S. Cl. 307—132 E **11 Claims**

1. In an electrical 24-hour repeat cycle timer for operating an electrical controlled means between opposite control conditions over a repeating 24-hour cycle according to a program set by the user selecting particular contiguous or spaced hourly or fractional hourly basic timing intervals over each 24-hour cycle where said controlled means may be in either of said conditions, said timer including electrical storage means having individual fixed or changing storage locations respectively associated with said basic timing intervals and in which storage locations a coded marker is placed as a result of said programming so that together the markers in the storage locations indicate the timing pattern in which said controlled means may be operated into either of said conditions, system timing means for identifying in real time the beginning of said basic timing intervals occurring during each 24-hour cycle; accessing means for sequentially accessing said storage locations and the markers therein in the same sequential order that said markers were placed therein during said programming, said accessing



means being responsive to periodic signals from said system timing means so that a different storage marker may be accessed in synchronism with the beginning of said basic timing intervals, and control means for operating said controlled means in accordance with the coding of the markers accessed by said accessing means; the improvement comprising program readout offsetting means for establishing during successive 24-hour cycles shifted storage location accessing patterns so that at least the times during which said controlled means is initially operated from one to the other of said conditions will be shifted relative to one another during said successive 24-hour cycles, said readout offsetting means comprising means for displacing the storage locations of the storage means accessed during one of said successive cycles from those accessed during the next one of said cycles during identical timing intervals.

4,354,121

FIELD CONTROLLED THYRISTOR CONTROL CIRCUIT WITH ADDITIONAL FCT IN REVERSE BIAS CIRCUIT

Yoshio Terasawa, Katsuta; Kenji Miyata, Hitachi; Saburo Oikawa, Hitachi; Susumu Murakami, Hitachi; Masahiro Okamura, Hitachi, and Takuzo Ogawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 14,587, Feb. 23, 1979, abandoned. This application Jul. 10, 1981, Ser. No. 284,794
Claims priority, application Japan, Feb. 23, 1978, 53-19064
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—252 C **15 Claims**

1. A field controlled thyristor (FCT) circuit comprising:

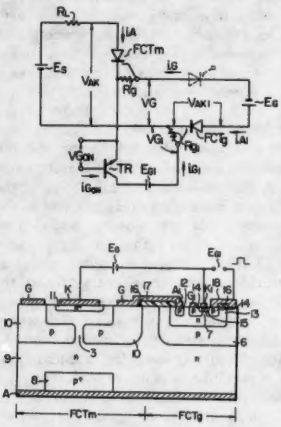
(a) a first FCT which comprises a semiconductor substrate including a first emitter region of one conductivity type, a base region of said one conductivity type adjacent to said first emitter region, a second emitter region of opposite conductivity type to said one conductivity type and adjacent to said base region, and a gate region of said opposite conductivity type formed in said base region to provide a channel in said base region to form a current path between said first and second emitter region directly via said base

region, a gate electrode connected to said gate region, a first main electrode connected to said first emitter region, and a second main electrode connected to said second emitter region, the first and the second main electrodes being provided for connection in series to a power source and a load;

(b) a first biasing means connected between said first main electrode and said gate electrode of said first FCT to apply a continuous reverse-bias to a junction formed between said first emitter region and said gate region in said semiconductor substrate of said first FCT for preventing a load current from flowing from said power source to said load through said first emitter region, said beam region including said channel, and said second emitter region of said first FCT by pinching off said channel with a depletion layer formed in said base region by said reverse-bias throughout a period when said reverse-bias is continuously applied to said first FCT so that said channel is continuously pinched off with said depletion layer;

(c) at least one second FCT

which comprises a semiconductor substrate including a first emitter region of one conductivity type, a base region of said one conductivity type adjacent to said first emitter region, a second emitter region of opposite conductivity



type to said one conductivity type and adjacent to said base region, and a gate region of said opposite conductivity type formed in said base region to provide a channel in said base region to form a current path between said first and second emitter region directly via said base region, a gate electrode connected to said gate region, a first main electrode connected to said first emitter region, and a second main electrode connected to said second emitter region, which the first and the second main electrodes are connected in series with said first biasing means, said first main electrode of said first FCT and said gate electrode of said first FCT; and

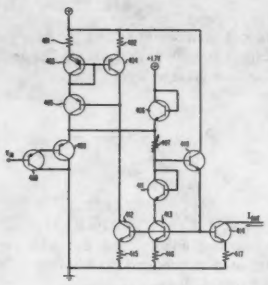
(d) a gate control means connected between said first main electrode of said second FCT and said gate electrode of said second FCT, to apply a continuous reverse-bias to a junction formed between said first emitter region and said gate region in said semi-conductor substrate of said second FCT to pinch off said channel of said second FCT with a depletion layer formed in said base region for preventing said junction of the first FCT from being applied with said reverse-bias by said first biasing means throughout a period when said channel of said second FCT is pinched off so that said load current flows through said first FCT throughout a period when said reverse-bias by said gate control means is applied to said second FCT.

4,354,122

VOLTAGE TO CURRENT CONVERTER

Milton L. Embree, Reading, Pa., and William G. Garrett, Canton Township, Wayne County, Mich., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 8, 1980, Ser. No. 176,346
Int. Cl.³ H03K 3/36
U.S. Cl. 307—261 **4 Claims**



1. A voltage to current converter circuit having a high input impedance and zero temperature coefficient for providing an accurate output current from an input voltage, said circuit comprising:

an input circuit for accepting applied voltages, including first and second transistors arranged to provide a high input impedance,

third and fourth mirror connected transistors arranged as an output current mirror and having commonly connected base electrodes,

an impedance connected between the emitter electrode of said second transistor and said fourth transistor,

fifth and sixth mirror connected transistors connected respectively to the emitter of said second transistor and to the collector of said third transistor to ensure that the current flow through said input circuit equals the current flow through said output current mirror,

means, including a seventh transistor for compensating for the base to emitter voltage drop of said first transistor, said compensating transistor having its base connected to said impedance and its emitter connected to said base of said fourth transistor, said fourth transistor functioning to compensate for the base to emitter voltage drop of said second transistor,

an output circuit including an eighth transistor having its base electrode connected to said commonly connected base electrodes of said output current mirror, and

clamping means responsive to said input voltage for providing an output current whenever said input voltage decreases below a predetermined threshold.

4,354,123

HIGH VOLTAGE CLOCK GENERATOR

Sargent S. Eaton, Jr., Colorado Springs, Colo., assignor to Mostek Corporation, Carrollton, Tex.

Filed Aug. 13, 1979, Ser. No. 66,148
Int. Cl.³ H03K 4/24
U.S. Cl. 307—475 **8 Claims**

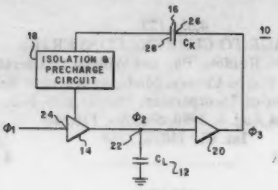
1. A high voltage clock generator comprising:

a first clock generator to charge a load capacitance to a first voltage level;

a bootstrap capacitance having a base plate and a top plate;

an isolation and precharge circuit to charge the top plate of

the bootstrap capacitance at a time prior to driving the load capacitance to a second voltage level; and



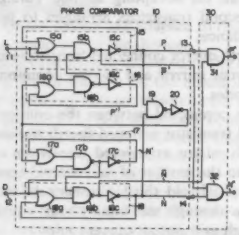
a second clock generator to drive the base plate of the bootstrap capacitance such that the load capacitance is driven to the second voltage level.

4,354,124

DIGITAL PHASE COMPARATOR CIRCUIT

Takeshi Shima, Sagamihara, and Ken-ichi Torii, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 10, 1980, Ser. No. 158,310
Claims priority, application Japan, Jun. 19, 1979, 54-76265
Int. Cl.³ H03K *13/32, 5/26*
U.S. Cl. 307—522 **4 Claims**



1. A digital phase comparator circuit comprising:

a digital phase comparator including first and second input terminals, first and second output terminals and a plurality of logic gates having a propagation delay time and interconnected between said first and second input terminals on one hand and said first and second output terminals on the other hand, said phase comparator being so arranged as to produce, when there is a phase difference between the waveforms of input signals applied to said first and second input terminals, an output pulse signal corresponding to said phase difference at either one of said first and second output terminals; and

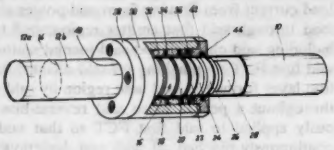
an undesired pulse removing circuit connected to said first and second output terminals of said phase comparator for removing undesired pulse output signals simultaneously produced at said first and second output terminals during a transition period of internal state of said phase comparator due to the propagation delay times of said logic gates included in said phase comparator and including a first gate means receiving an output signal at said first output terminal and an inversion signal of an output signal at said second output terminal, and a second gate means receiving the output signal at said second output terminal and an inversion signal of the output signal at said first output terminal.

4,354,125

MAGNETICALLY COUPLED ARRANGEMENT FOR A DRIVING AND A DRIVEN MEMBER

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,999
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922444
Int. Cl.³ H02K *49/00*
U.S. Cl. 310—103 **7 Claims**



1. In an arrangement having a hollow cylindrical tube and driving and driven members movable thereon for conveying articles, the improvement comprising wherein said tube is made of a nonmagnetic material, wherein said driving member is a piston movably mounted on the inside of said tube, said piston having a piston body and plural axially spaced, first permanent annular magnets encircling said piston body, said piston further including first means spacing said first permanent magnets in said axial spaced relation, the radially peripheral surface of said magnets being oriented close to the internal wall surface of said tube, said piston further including plural guide ring means encircling said piston body and slidingly engaging said internal wall and first sealing rings located axially outside said guide rings for wiping said internal wall as said piston moves along said tube to thereby cause any impurities that may be present in said tube to be pushed along said tube so that said first annular magnets will be free of interference from said impurities, wherein said driven member includes a cylindrical sleeve made of a magnetizable material and encircles said tube, said sleeve having plural axially spaced second permanent annular magnets affixed thereto and in magnetically attracting relation to said first permanent annular magnets and second means spacing said second permanent annular magnets in said axially spaced relation, the radially inner surface of said magnets being oriented close to the external surface of said tube, said sleeve having end face means with second sealing rings located axially outside said second permanent annular magnets for wiping the external wall surface of said tube as said driven member is moved along said tube in response to a driving movement of said piston to thereby cause any impurities that may be present on said tube to be pushed along said tube so that said second permanent annular magnets will be free of interference from said impurities.

4,354,126

DYNAMOELECTRIC MACHINE WITH A PERMANENT MAGNET ROTOR HAVING LAMINATED POLES

William W. Yates, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1980, Ser. No. 186,882
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 **6 Claims**

1. A dynamoelectric machine comprising:

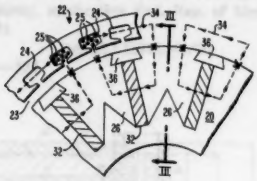
a stator and a rotor in a mutually inductive rotation with an air gap therebetween;

said rotor comprising a core of a plurality of stacked laminations including magnetic laminations and non-magnetic structural laminations interspersed among said non-magnetic laminations as one proceeds longitudinally through said cor;

said rotor core having a plurality of permanent magnets extending therethrough producing a plurality of magnetic

flux paths circumferentially disposed about the periphery of said core, said plurality of permanent magnets each having a rectangular cross-section and each having major surfaces oriented in a substantially radial plane;

each of said permanent magnets being secured against radially outward movement by a wedge extending longitudinally through said core at the outer periphery thereof, said



wedges being of non-magnetic material and mechanically locked in place within said laminations while said radially outer edges of said laminations between wedges are exposed;

a plurality of bead welds extending longitudinally over the surface of said core to secure said laminations into a unit while minimizing the surface area of said core that is shielded from the air gap.

4,354,127

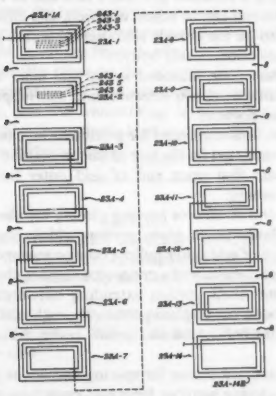
ALTERNATOR WINDING

Lebern W. Stroud, 3237 Gerome, Forth Worth, Tex. 76118

Filed Jul. 28, 1980, Ser. No. 172,826

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—198 **1 Claim**



1. An alternator of the type having an annular stationary stator with a rotor concentrically located therein, comprising:

an annular structure formed of ferro-magnetic material defining an annular stator core having forty-two segments with adjacent segments being separated by a slot such that there are forty-two slots which extend in a direction parallel to the axis of said stator core, and

a three phase stator winding connected in a delta configuration,

each phase comprising a winding having fourteen coils extending around said stator core on the inside thereof,

each of said coils of each phase winding comprising a plurality of turns of wire encircling three segments,

said fourteen coils of each phase winding having a plurality of turns located in fourteen of said slots such that said fourteen slots for each phase respectively has the following number of turns located therein 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,

said fourteen coils of each phase winding respectively having the following number of turns at one edge 5, 3, 5, 3, 5, 3, 5, 3, 5, 3, 5, 3, 5, 3,

said fourteen coils of each phase winding respectively having the following number of turns at the other edge 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 3,

each of said phase windings being formed of 14 A.W.G. electrically conductive wire.

4,354,128

DYNAMO ELECTRIC MACHINE BRUSH ASSEMBLY

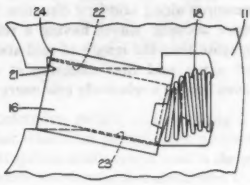
Anthony J. Chew, Stirchley; Graham M. Leeder, Sutton Coldfield, and Thomas W. Pickford, Walsall, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 25, 1980, Ser. No. 172,217

Claims priority, application United Kingdom, Aug. 10, 1979, 7927909

Int. Cl.³ H01R *39/38*

U.S. Cl. 310—242 **11 Claims**



1. A brush assembly comprising a substantially flat electrically insulating plate having therein an aperture within which, in use, the commutator of an associated dynamo electric machine rotates, first and second closed ended slots in the plate, each slot having a pair of longitudinal edges leading into said aperture, said slots each having an open end communicating with said aperture and extending outwardly from said aperture, first and second brushes slidably received in said first and second slots respectively, and first and second compression springs urging said first and second brushes along the length of their respective slots towards said aperture, each of said brushes being formed on opposite sides with longitudinally extending grooves within which the longitudinal edges of said slots are received slidably to mount said brushes in said slots, said plate end each brush having respective surfaces which are interengageable when the brush is retracted against the action of the respective compression spring and tilted relative to the plate so that mutual engagement of said respective surfaces serves to latch the brush in a retracted position such that the brush will not impede the insertion of a commutator into said aperture.

4,354,129

ABSORBER FOR PIEZOELECTRIC SURFACE ACOUSTIC WAVE DEVICE

Hideharu Ieki, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 16, 1980, Ser. No. 140,857

Claims priority, application Japan, Apr. 28, 1979, 54/52874

Int. Cl.³ H01L *41/08*

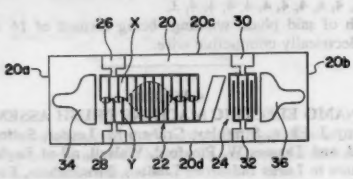
U.S. Cl. 310—313 C **8 Claims**

1. A surface acoustic wave device, comprising:

a substrate formed of a material capable of propagating acoustic waves along a surface of the substrate;

transducer means deposited on said surface and including a pair of electrodes arranged in the shape of combs having interdigitated teeth, said teeth overlapping each other by varying amounts so as to cause said transducer means to

launch, along a path extending in a first direction on said surface, acoustic waves having a continually varying nonuniform energy distribution as measured along a line extending in a second direction perpendicular to said first direction between a first point having a substantially zero energy level to a second point having a substantially zero energy level; and



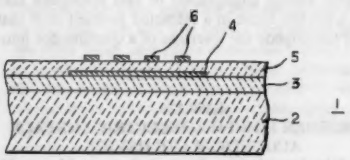
absorber means deposited on said surface along said path for absorbing acoustic waves propagating along said path towards said absorber means, said absorber means being made of absorbent material, the length of said absorber means as measured along said first direction being longer at areas where acoustic waves having a relatively high energy propagate than the length of said absorber means as measured along said first direction at areas where acoustic waves having a relatively low energy propagate.

4,354,130

SURFACE ACOUSTIC WAVE DEVICE USING A MULTI-LAYER SUBSTRATE INCLUDING αAL_2O_3, SIO AND ZNO

Shusuke Ono, Takatsuki; Tsuneo Mitsuyu, Hirakata; Osamu Yamazaki, Suita, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 5, 1980, Ser. No. 213,732
Claims priority, application Japan, Dec. 19, 1979, 54-166104
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—313 A **16 Claims**



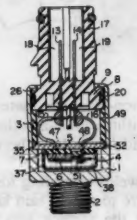
1. A surface acoustic wave device comprising a multi-layered substrate, in which said multi-layered substrate comprises at least, in the following order, an α-Al_2O_3 single crystal base made of a single crystal having an (0112) crystallographic plane or a crystallographically equivalent plane, an intermediate silicon oxide layer, a metal film, a piezoelectric zinc oxide layer and an interdigital electrode, the thickness of said metal film being very much smaller than λ and said zinc oxide layer having a layer thickness which ranges from 0.8/k to 3.7/k, where k is a wave constant equal to $2\pi/\lambda$, λ being the wavelength of said surface acoustic wave.

4,354,131

SENSOR WITH CROSS-BASE MOUNTING PLATE

Kiyokane Kaji, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 24, 1980, Ser. No. 162,499
Claims priority, application Japan, Aug. 15, 1979, 54-104302
Int. Cl.³ H01L *41/10*
U.S. Cl. 310—328 **5 Claims**



1. A sensor for sensing vibration of a body, comprising:
an outer hollow tubular sensor casing having a stepped bore providing a shoulder portion, a first end of which is open and a second end of which is closed, said closed end being provided on the outside side thereof with a protuberance for connection to said body;
a cross base plate mounted across the inner space in said outer hollow tubular sensor casing and supported by said shoulder portion;
a vibration sensor element for producing an electrical output signal, mounted on the side of said cross base plate remote from said first open end of said outer hollow tubular sensor casing;
a unitary end connector housing closing member including a lower body cover plate portion which closes said first open end of said outer hollow tubular sensor casing firmly mounted thereto, and a connector contact element protective outer shell portion extending outwardly from said lower body cover plate portion through said open end of said outer hollow tubular sensor casing defining a cavity space;
a tubular spacing means for spacing said cover plate portion of said closing member from said cross base plate so as to provide an intermediate space therebetween;
at least one electrically conducting lead wire having an inner end portion connected to said vibration sensor element for receiving a sensor output electrical signal therefrom and an outer end portion passing substantially in an airtight manner through said cross base plate; and
an electrical connector element extending through said cover plate portion of said connector housing into said cavity space defined by said connector contact element protective outer shell portion and connected to said outer end portion of said at least one electrically conducting lead wire on the side of said cover plate portion of said closing member remote from said connector contact element protective outer shell portion within said intermediate space.

4,354,132

ULTRASONIC TRANSDUCER WITH A PLASTIC PIEZOELECTRIC RECEIVING LAYER AND A NON PLASTIC TRANSMITTING LAYER

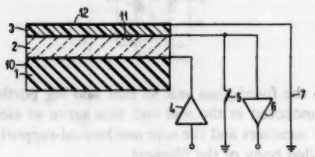
Jacques Borburgh, Poxdorf, and Ingmar Feigt, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,371

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2914031

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—334 15 Claims



1. An ultrasonic transducer comprising a transmitting layer comprising piezoelectric material having a relatively high dielectric constant and a relatively high acoustic impedance, a receiving layer comprising piezoelectric material having a relatively low dielectric constant and a relatively low acoustic impedance, wherein the layers are interconnected in a laminar manner, and support means having the transmitting layer adjacent thereto and having the receiving layer in front of the transmitting layer such that acoustic waves generated by the transmitting layer are transmitted to body tissue under examination via the receiving layer, said receiving layer comprising a piezoelectric plastic film having an inner electrode means located between the transmitting layer and the receiving layer and having an outer electrode means at the front of the receiving layer, said receiving layer having an acoustic impedance which is relatively close to the acoustic impedance of body tissue in comparison to the acoustic impedance of said transmitting layer, and the transmitting layer having an acoustic impedance which is relatively high in comparison to the acoustic impedance of body tissue.

4,354,133

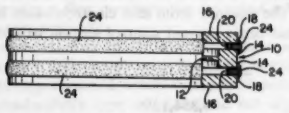
HERMETICALLY SEALED CONTAINER

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1980, Ser. No. 182,540

Int. Cl.³ C25D *11/00*; H01J *5/00*

U.S. Cl. 310—344 5 Claims



1. An improved hermetically sealed ceramic container for enclosing a crystal resonator comprising a receptacle having at least one opening with said crystal resonator mounted therein; a closure element covering each said opening; an aluminum seal between said closure element and said receptacle, said aluminum seal peripherally surrounding said opening and hermetically sealing said closure element to said receptacle; and a sealing deposit of an aluminum oxide anodizing coating applied to the outer surface of said aluminum seal.

4,354,134

PIEZOELECTRIC ACCELERATION PICKUP WITH A POLYMER TRANSDUCER MEMBER

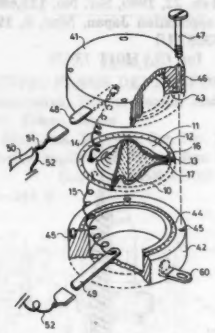
Francois Micheron, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 26, 1980, Ser. No. 163,191

Claims priority, application France, Jun. 29, 1979, 79 16897

Int. Cl.³ H01L *41/22*

U.S. Cl. 310—800 8 Claims



1. An acceleration pickup incorporating a polymer transducer member which has piezoelectric properties after undergoing an appropriate treatment, at least in the polymer material regions between two conductive electrodes at the terminals of which a voltage develops which is displaceable and related to the displacement of a seismic mass subject to an acceleration to be detected, wherein the seismic mass is constituted by at least one predetermined region of the polymer material, wherein said transducer member has the configuration of a film obtained by moulding said polymer material, said film having an excrescence in at least one predetermined region of its surface and said excrescence constitutes the seismic mass, said two conductive electrodes being applied to each side of said film forming said transducer member, and wherein the transducer member has a revolution structure with respect to an axis perpendicular to the plane of said film, said excrescence being in the form of a central dome with the same revolution axis.

4,354,135

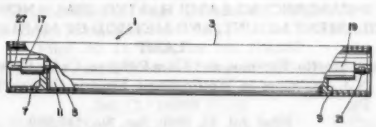
GEIGER-MUELLER TUBE WITH NICKEL COPPER ALLOY CATHODE

Nicholas Mitrofanov, Cleveland, and Arthur C. Lucas, Chagrin Falls, both of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Filed May 14, 1980, Ser. No. 149,778

Int. Cl.³ H01J *47/08*

U.S. Cl. 313—93 3 Claims



1. In a Geiger-Mueller radiation detector including a sealed chamber defined by a cylindrical cathode and two end caps, a wire anode disposed within said chamber concentrically with respect to said cathode and a gaseous mixture confined in said chamber and comprising predominantly an inert gas and minor amounts of an ionizing gas and a halogen quenching gas, the improvement comprising the use of a cathode consisting of an alloy containing between 60 and 70% nickel and between 35

and 25% copper and having a thin layer of platinum electrodeposited on the interior surface thereof.

4,354,136
IGNITION PLUG FOR INTERNAL COMBUSTION ENGINE

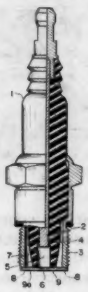
Kyugo Hamai, Yokosuka; Meroji Nakai, Yokosuka; Ryuzaburo Maruyama, Fujisawa, and Yasuhiko Nakagawa, Kamakura, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 22, 1980, Ser. No. 123,690

Claims priority, application Japan, Mar. 8, 1979, 54-27132; Nov. 5, 1979, 54-153557[U]

Int. Cl.³ H01T *13/20*

U.S. Cl. 313—139 **9 Claims**



9. An ignition plug for an internal combustion engine, comprising:

an electrically conductive plug body having a cylindrical lower portion which is externally threaded for engagement with an engine cylinder head;

an insulating member received within the lower portion of said plug body and entending upwardly therefrom, the lower portion of said insulating member being shaped to define a plasma generating chamber;

a first electrode extending through said insulating member along the longitudinal axis thereof, with the lower end of said first electrode protruding into said plasma generating chamber;

a second electrode spaced from said first electrode and extending from said plug body externally across said plasma generating chamber, said second electrode cooperating with said plug body and said insulating member to define an annular chamber surrounding said plasma generating chamber; and

first and second operating sections in said second electrode communicating respectively with said plasma generating chamber and said annular chamber.

4,354,137
INCANDESCENT LAMP HAVING SEAL-ANCHORED FILAMENT MOUNT, AND METHOD OF MAKING SUCH LAMP

Jack Martin, Paramus, and Elam Pitkjaan, Cedar Grove, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 15, 1980, Ser. No. 168,999

Int. Cl.³ H01K *1/18*

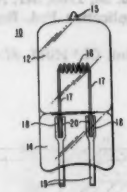
U.S. Cl. 313—222 **11 Claims**

1. In an electric incandescent lamp that has a glass envelope which is terminated at one end by an hermetic seal of fused glass, the improvement comprising the combination of;

a refractory wire filament having a coiled body and a pair of uncoiled leg portions the ends whereof are substantially disposed in side-by-side relationship, and

a pair of lead-in wires that have flattened end portions which are fastened to the ends of the filament leg portions by a welded juncture or a brazed junction and thus form electrical junctures that are devoid of separate interconnecting conductor members,

the uncoiled leg portions of said filament being of such length that at least a part of each of the electrical junctures is embedded in the fused-glass seal so that said leg portions are securely anchored in the seal and thus serve as electrical-connector members and the sole mechanical-support means for the coiled body of the filament,



the lead-in wires being of such length that the free ends thereof protrude from the sealed end of the envelope.

4,354,138
TELEVISION CAMERA TUBE WITH ELECTROSTATIC FOCUSING AND MAGNETIC DEFLECTION

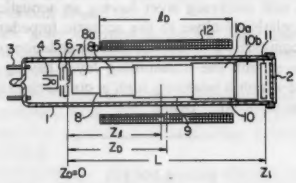
Masanori Maruyama, Kokubunji; Masashi Mizushima, Shizuoka; Masakazu Fukushima, Kokubunji; Satoru Miyamoto, and Hideyuki Sakai, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,995

Claims priority, application Japan, Oct. 3, 1979, 54/126843

Int. Cl.³ H01J *31/00, 31/26*

U.S. Cl. 313—440 **3 Claims**



1. In a camera tube with electrostatic focusing and magnetic deflection comprising a beam current control section having an electron beam limiting diaphragm, a focusing lens section including three cylindrical electrodes, a mesh electrode, and a magnetic deflection coil, the improvement in that the length of said magnetic deflection coil in the direction of the tube axis is 0.18–0.40 times the distance from said electron beam limiting diaphragm of said beam current control section to said mesh electrode.

4,354,139
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Willem L. Konijnendijk; Robert C. Peters, and Petrus J. M. Willemsen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,890

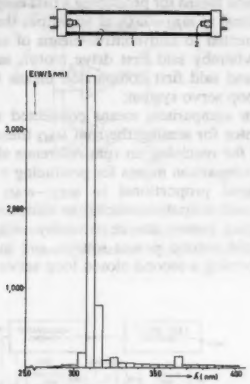
Claims priority, application Netherlands, Jul. 3, 1979, 7905161

Int. Cl.³ C09K *11/46*

U.S. Cl. 313—486 **8 Claims**

1. A low-pressure mercury vapour discharge lamp for radia-

tion purposes having a discharge tube made of glass with selective transmission, the tube being coated on the inside with a luminescent layer, characterized in that the luminescent layer contains a luminescent material which has the characteristic



line emission of gadolinium at 312 nm, and that the discharge tube is made of glass having an absorption edge located between 260 and 280 nm, the tube having at 312 nm a transmission of at least 80%.

4,354,140

LIGHT-EMITTING SEMICONDUCTOR

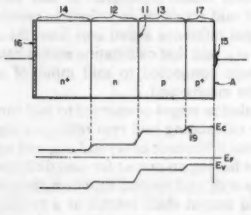
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed May 28, 1980, Ser. No. 154,057

Claims priority, application Japan, May 28, 1979, 54-66679; May 28, 1979, 54-66680

Int. Cl.³ H01L *33/00*

U.S. Cl. 313—499 **22 Claims**



1. A light-emitting semiconductor device for radiating incoherent light, comprising:

a semiconductor substrate;

a first semiconductor layer disposed on said substrate and having a first conductivity type and a first net impurity concentration;

a second semiconductor layer disposed on said first semiconductor layer to act as a dominant luminescent layer and having a second conductivity type opposite to said first conductivity type and a second net impurity concentration and forming a pn junction with said first semiconductor layer, said second conductivity type being constituted by shallow impurities which are atoms different from those in the first semiconductor layer; and

a third semiconductor layer disposed on said second semiconductor layer and having said conductivity type and a third net impurity concentration and substantially a same composition as that of the second semiconductor layer,

said third net impurity concentration being at least about e times said second net impurity concentration where e is the value of the base of natural logarithms for forming an effective potential barrier for minority carriers in said second semiconductor layer,

the third net impurity concentration being about $2\times10^{19}cm^{-3}$ as substantially an upper limit value not inducing many defects at the interface of said second and third semiconductor layers when the second conductivity type is p type and about $7\times10^{18}cm^{-3}$ as substantially an upper limit value not inducing many defects at the interface of said second and third semiconductor layers when the second conductivity is n type.

4,354,141

ELECTRIC FLASH DEVICE FOR CAMERA

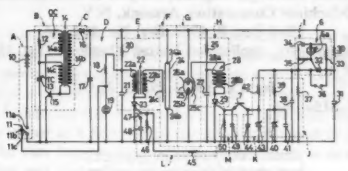
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,418

Claims priority, application Japan, Jun. 22, 1979, 54-078013

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **16 Claims**



1. An electric flash device for a camera comprising a first flash unit built into said camera, and having a first flashing member including a first flash tube, and a second flash unit mountable on said camera and having a second flashing member including a second flash tube, and a flash control circuit arrangement for controlling flash operation of said second flash unit in synchronization with the flashing operation of the first flash unit, said flash control circuit arrangement comprising a power source circuit for providing an electric charge, an electric charge storing circuit for storing said electric charge from said power source circuit, trigger signal generating means for triggering said second flash tube of the second flashing member, flash operation starting means activated by a flash light from said first flash unit and for activating said trigger signal generating circuit, and flashing operation selecting means for selectively setting the flash operation of said second flash tube of said second flash unit such that the second flash tube flashes when said first flash tube in the camera flashes.

4,354,142

CIRCUIT ARRANGEMENT FOR THE PULSED ILLUMINATION OF A STROBOSCOPE RING

Alfred Seitz, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,353

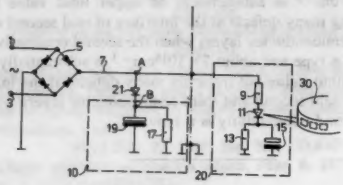
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 2916623

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—241 S **3 Claims**

1. A circuit arrangement for pulsed illumination of a stroboscopic ring used for a record player comprising an alternating voltage source, means connected to said alternating voltage source for providing a pulsating direct voltage, a series circuit connected to said means and including a first resistor, a light emitting diode, and a parallel circuit of a second resistor and a capacitor, a stroboscope ring receiving periodic light pulses from said light emitting diode to produce stroboscopic images,

and a smoothing circuit connected in parallel with said series circuit, said smoothing circuit including a diode for isolating



said smoothing circuit from said pulsating direct voltage and a second parallel circuit of a load and second capacitor.

4,354,143

EQUIPMENT TO CORRECT ABERRATIONS OF A CATHODE RAY BEAM

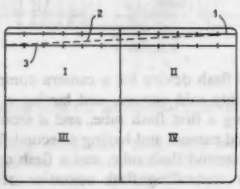
Ian D. Judd, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,146

Claims priority, application United Kingdom, Dec. 15, 1979, 7943294

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—368 **5 Claims**



1. Cathode ray tube equipment including correction means for correcting an aberration of a cathode ray beam as the beam is scanned across the screen, said correction means being responsive to correction signals, characterized by a digital store arranged in operation to store finite differences of functions defining the correction signals and digital calculating apparatus which in operation derives cyclicy, successive correction signals by summing appropriate finite differences.

4,354,144

TRANSMISSIONLESS DRIVE SYSTEM

Milton E. H. McCarthy, 359 Warwick Ave., Ormond Beach, Fla. 32074

Continuation-in-part of Ser. No. 171,797, Jul. 24, 1981. This application Feb. 1, 1982, Ser. No. 344,682

Int. Cl.³ H02P *1/16*

U.S. Cl. 318—13 **16 Claims**

1. A vehicle driving system comprising:

a mechanical differential means having a first input shaft for being driven at a rotational speed of $\pm\omega_{S1}$, a second input shaft for being driven at a rotational speed of $\pm\omega_{S2}$, and an output shaft, said differential means for driving said output shaft at a rotational speed $\omega_S=\frac{1}{2}(\pm\omega_{S1}\pm\omega_{S2})$ where the algebraic sign indicates direction of rotation;

a first controllable speed drive motor connected to said first input shaft for rotation thereof;

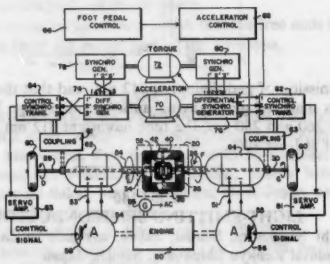
a second controllable speed drive motor connected to said second input shaft for rotation thereof;

a first power source connected to said first drive motor, said first power source including control means for controlling the speed of said first drive motor;

a second power source connected to said second drive motor, said second power source including control means for controlling the speed of said second drive motor;

first rpm comparison means connected to said first drive motor for sensing the rpm ω_{M1} thereof and having an input for receiving an rpm reference signal ω_{R1}, said comparison means for producing a first output error signal proportional to $\omega_{R1}-\omega_{M1}$ at an output thereof, said output connected to said control means of said first power source whereby said first drive motor, said first power source, and said first comparison means forming a first closed loop servo system;

second rpm comparison means connected to said second drive motor for sensing the rpm ω_{M2} thereof and having an input for receiving an rpm reference signal ω_{R2}, said second comparison means for producing a second output error signal proportional to $\omega_{R2}-\omega_{M2}$ at an output thereof, said output connected to said control means of said second power source whereby said second drive motor, said second power source, and said comparison means forming a second closed loop servo system;



torque reference means for producing a selectable torque rpm reference signal ω_T;

acceleration reference means for producing a selectable acceleration rpm reference signal ω_A;

first calculation means connected to said torque reference means and said acceleration reference means for calculating said rpm reference signal ω_{R1} from the algebraic sum of ω_T and ω_A, said first calculation means having an output for said sum connected to said input of said first rpm comparison means; and

second calculation means connected to said torque reference means for calculating said rpm reference signal ω_{R2} from the algebraic difference of ω_T and ω_A, said second calculation means having an output for said difference connected to said input of said second rpm comparison means;

whereby said output shaft rotates at a rotational speed ω_S equal to the rpm represented by acceleration rpm reference signal ω_A.

4,354,145

ELECTRONICALLY COMMUTATING MOTOR

Johannes H. H. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,541

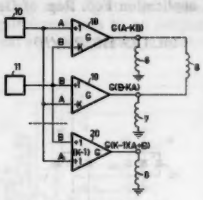
Claims priority, application Netherlands, Dec. 12, 1979, 7908926

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—254 **11 Claims**

1. An electric machine having electronic commutation comprising, a rotor which at least partly comprises a permanent magnetic material, which rotor co-operates with at least two stationarily arranged stator coils, at least two magneto-sensitive Hall elements arranged on a common substrate for supplying signals which vary substantially sinusoidally with the rotor position in order to energize the stator coils as a function of the rotor position via an energizing circuit, the magneto-sensitive elements being arranged at angular spacings around the rotor

axis which are smaller than the phase difference ϕ which is necessary between the energizing signals for the stator coils in order to obtain a correct energization of said stator coils, and the energizing circuit includes a combining circuit for linearly



combining the signals supplied by the at least two magneto-sensitive elements so as to obtain at least two energizing signals having a mutual phase difference which is substantially equal to ϕ.

4,354,146

DRIVE APPARATUS

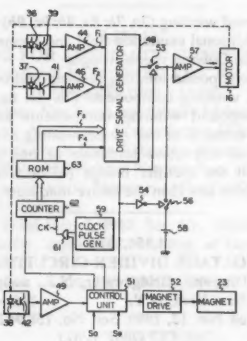
Shigemoto Tenmyo, and Hiroshi Koide, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,823

Claims priority, application Japan, Jun. 12, 1979, 54-73074

Int. Cl.³ H02P 5/06

U.S. Cl. 318—341 **4 Claims**



1. A drive apparatus for moving an object at a command speed which is a predetermined function of time including a motor for moving the object, command signal generator means for generating a periodic digital command signal having an instantaneous period corresponding to the command speed and feedback signal generator means for generating a periodic digital feedback signal having an instantaneous period corresponding to an actual speed of the object, characterized by comprising:

memory means for receiving the command and feedback signals in combination as an address input, the memory means storing in addresses thereof digital drive signals having magnitudes which are predetermined in accordance with a phase difference between the respective command and feedback signals; and

drive means for energizing the motor in accordance with a magnitude of the drive signal addressed in the memory means.

4,354,147

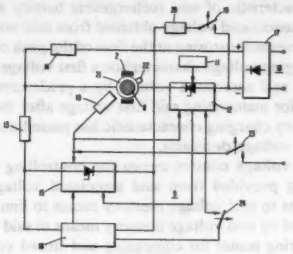
DRIVE AND CONTROL ARRANGEMENT FOR A MECHANICAL ECCENTRIC PRESS

Hans-Jürgen Klaussner, Strehlgasse 24, CH-8472, Seuzach, Switzerland

Filed Aug. 15, 1980, Ser. No. 178,448

Int. Cl.³ H02P 3/12

U.S. Cl. 318—363 **5 Claims**



1. In a mechanical eccentric press including a ram which is moved between a top dead center position and a bottom dead center position by means of a d.c. electric motor having a drive shaft that is connected to the ram by an eccentric mechanism and a connecting rod, and means for automatically deactivating the motor as a function of the angular position of its shaft after the ram has reached bottom dead center, a device for actuating and controlling the motor, comprising:

a limit switch that is adjustably positioned on said shaft so as to be actuated at an adjustable point during the rotation of said shaft after the ram reaches bottom dead center;

a braking sequence circuit that is operable to short-circuit the armature of the motor through a braking resistance upon actuation of said limit switch, to thereby brake the motor; and

a starting sequence circuit for automatically interrupting a braking operation performed by said braking sequence circuit a predetermined time period after actuation of said limit switch.

4,354,148

APPARATUS FOR CHARGING RECHARGEABLE BATTERY

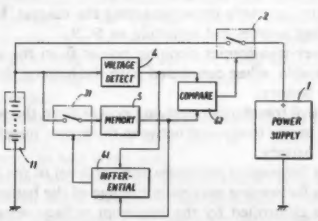
Kinya Tada, Kobe, and Kenji Oyamada, Yawata, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Apr. 9, 1980, Ser. No. 138,590

Claims priority, application Japan, Apr. 18, 1979, 54/48138; Apr. 18, 1979, 54/48139; Aug. 7, 1979, 54/100996; Aug. 8, 1979, 54/101637; Aug. 11, 1979, 54/102676

Int. Cl.³ H02J 7/04

U.S. Cl. 320—20 **33 Claims**



1. An apparatus for charging a rechargeable battery having a charging voltage characteristic exhibiting a peak value shortly before said rechargeable battery reaches a fully

charged state and thereafter exhibiting a gradually decreasing charge until said fully charged state is reached, said apparatus comprising:

charging voltage source means for supplying an electric current for charging said rechargeable battery,

means coupled to said rechargeable battery for providing a voltage associated with the terminal voltage of said rechargeable battery as it is being charged,

voltage memory means responsive to said charging voltage characteristic of said rechargeable battery and based on said associated voltage obtained from said voltage providing means for storing at the time of the peak of said battery charging voltage characteristic a first voltage which is less than said associated voltage by a predetermined voltage and for maintaining said first voltage after the peak of the battery charging characteristic has passed and said associated voltage decreases,

stored voltage control means for controlling said voltage being provided from said associated voltage providing means to said voltage memory means to limit the voltage stored by said voltage memory means to said first voltage,

comparing means for comparing said stored voltage in said voltage memory means and said associated voltage obtained from said voltage providing means after said peak of said charging voltage characteristic of said rechargeable battery is passed, and

control means responsive to the output of said comparing means for controlling said electric current supplied from said charging voltage source means to said rechargeable battery.

4,354,149

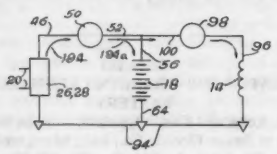
BATTERY CHARGE SYSTEM

Joseph A. Armond, and Gabriel R. Buky, both of c/o Electro-Matic Products Co., 2235 N. Knox Ave., Chicago, Ill. 60639

Filed Sep. 11, 1980, Ser. No. 186,509

Int. Cl.³ H02J 7/04

U.S. Cl. 320—40 **10 Claims**



1. A battery charge system, comprising

a magnet adapted to hold a load,

a battery,

an electrical power source,

circuitry operably interconnecting the magnet, battery and power source, and including an SCR,

a power transformer deriving power from the source and operable, when connected with the battery, for charging the battery,

a control transformer deriving power from the source,

valve means interposed between the power transformer and the battery,

means for sensing minimum voltage level of the battery,

means for sensing maximum voltage of the battery, and

means controlled by the minimum voltage sensing means and operative for turning on the SCR and thereby connecting the power source and the battery, and controlled by the maximum voltage sensing means and operative for turning off the SCR and thereby disconnecting the power source from the battery.

4,354,150

ELECTRICAL GENERATOR

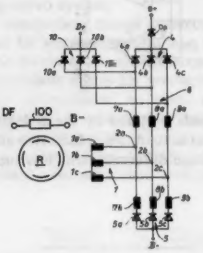
Wolfgang Kofink, Aichwald, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,718

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920863

Int. Cl.³ H02P 9/10

U.S. Cl. 322—63 **6 Claims**



1. An electrical generator system, in particular for use with a slip ringless three-phase a-c generator suitable for motor vehicles and the like having

a three-phase armature winding (1);

a rotor (R);

at least one exciter winding (100) providing field excitation power;

a full-wave three-phase bridge rectifier (6, 4, 5);

an exciter rectifier (10) connected to the armature winding and supplying excitation current for the exciter winding (100);

and a compound winding (7a, 7b; 8a, 8b; 9a, 9b) positioned to provide additional excitation field and connected to have load current flowing therethrough,

wherein the compound winding is composed of at least two compound winding components (7a, 7b; 8a, 8b; 9a, 9b), which compound winding components are connected between a terminal of one phase winding of the armature winding and respective terminals of one phase of the branches of the rectifier bridge (6) in which said one branch carries less than the entire load current.

4,354,151

VOLTAGE DIVIDER CIRCUITS

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,942

Int. Cl.³ G05F 1/613

U.S. Cl. 323—225 **14 Claims**

1. A voltage divider comprising:

a complementary symmetry inverter comprised of a first P-channel insulated-gate field-effect transistor (IGFET) and a first N-channel IGFET, each IGFET having a gate electrode, and source and drain electrodes defining the ends of a conduction path;

first and second power terminals for the application therebetween of an operating voltage to be divided, the voltage to be applied to said first terminal being positive relative to the voltage to be applied to said second terminal;

means connecting the source electrode of said first P-IGFET to said first power terminal and means connecting the source electrode of said first N-IGFET to said second power terminal;

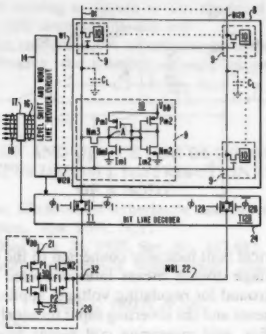
a complementary symmetry voltage follower stage comprising first and second output transistors of P and N conductivity type, respectively, each output transistor having an input and an output and a control electrode;

means connecting the drain electrodes of said first and sec-

ond IGFETs to the control electrodes of said first and second output transistors;

means for applying relatively positive and relatively negative operating potentials to the output electrodes of said first and second output transistors, respectively;

means connecting said input electrodes of said first and second output transistors to an output terminal for producing thereat a voltage which is a portion of the potential



applied between said first and second power terminals; and

negligible impedance means connecting said output terminal to the gate electrodes of said first and second IGFETs for feeding back the voltage at said output terminal to said gate electrodes of said first and second IGFETs and for biasing said inverter in the linear portion of its transfer characteristic.

4,354,152

METHOD FOR AUTOMATIC CONTROL OF THE VOLTAGE OF AN ELECTROSTATIC FILTER AT THE BREAKDOWN LIMIT

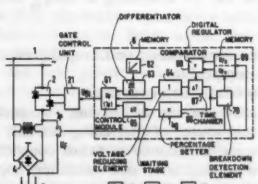
Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 213,093

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949664

Int. Cl.³ B03C *3/68*

U.S. Cl. 323—241 **7 Claims**



7. In a electrostatic filter which is fed from an a-c voltage source via a rectifier, a transformer and a final control element, apparatus for automatic control at the breakdown limit, comprising a microcomputer supplying a set control voltage to the control element, said microcomputer programmed to compute from the measured and stored filter values and data the required reduction of the filter voltage or filter current at breakdown and the waiting time until the next increase of the filter voltage such that, after each breakdown, the voltage or current is reduced by a percentage of the breakdown voltage or current which is dependent on the breakdown frequency during a preceding fixed period of time, and the waiting time to a new voltage increase is shortened if the measured voltage amplitude at breakdown has increased relative to the measured voltage amplitude at the preceding breakdown, and lengthened if the measured voltage amplitude at breakdown has decreased relative to the measured voltage amplitude at the preceding breakdown.

4,354,153

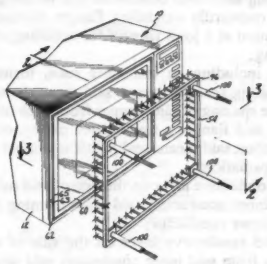
MICROWAVE OVEN LEAKAGE DETECTOR AND METHOD OF USING SAME TO TEST DOOR SEAL LEAKAGE

Ronald R. Lentz, Wayzata, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 19, 1979, Ser. No. 95,690

Int. Cl.³ G01R *21/04;* H05B *9/06*

U.S. Cl. 324—95 **25 Claims**



1. A method for determining the maximum possible power density of microwave leakage from a microwave oven in the region of the microwave oven door comprising the steps of:

(A) arranging a plurality of microwave sensitive antennae in a linear array, said array having a configuration corresponding to at least one edge of the circumference of said oven door, each of said antennae being spaced from each adjacent antenna a predetermined spacing distance, said spacing distance being equal to or less than the beamwidth corresponding to the highest mode of standing wave resonant energy in the oven whereby the narrowest beam of energy leaking from any aperture along said door edge of an oven being tested will be sensed by at least one of said antennae;

(B) positioning an oven to be tested adjacent to said array by:

i. paralleling said oven door edge at a predetermined distance to said array, and

ii. orienting said oven door edge to said array at a predetermined angle relative to the direction of maximum energy propagation from said oven door edge;

(C) measuring the microwave power density sensed by each antenna, and

(D) determining from said measurements the maximum possible power density of leakage at any point along said array.

4,354,154

MEASURING TRANSFORMER FOR HIGH-VOLTAGE SWITCH-GEAR WITH METAL ENCAPSULATION

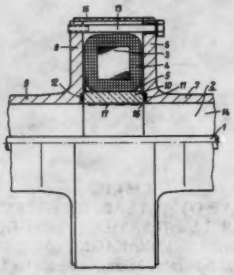
Heinz Schiemann, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 552,939, Feb. 25, 1975, abandoned. This application Mar. 26, 1979, Ser. No. 23,774

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1975, 2409990

Int. Cl.³ G01R *15/04;* H01F *40/06*

U.S. Cl. 324—126 13 Claims



1. A measuring transformer for use with a high voltage switch-gear having an inner conductor, metal encapsulation surrounding said inner conductor and forming an inner chamber, and outwardly extending flanges formed by said metal encapsulation at a joint thereof for retaining said transformer, comprising:

means, including an insulating tube, forming sealing and insulating spacing means, said means being determinative of the spacing of said flanges from each other and forming with said flanges a ring-shaped cavity, outside said inner chamber, said means sealing off said inner chamber of said encapsulation;

a first conductive layer on the side of said tube facing toward said inner conductor, said layer forming a capacitor with said inner conductor;

a second conductive layer on the side of said tube facing away from said inner conductor, said second conductive layer forming a capacitor with said first conductive layer on the side of said tube facing toward said inner conductor;

at least one iron core and a secondary winding disposed thereon, said core being disposed within said cavity and forming a current transformer with said inner conductor; and

mean for rigidly coupling said sealing and insulating spacing means and said flanges, in a sealing manner.

4,354,155

CIRCUIT ARRANGEMENT FOR MONITORING A CURRENT-CONSUMING LOAD

Volker Speidel, Schalksmühle; Eduard Bergmann, Ludenscheid; Klaus Kassner, Bochum, and Werner-Ernst Berginski, Werdohl-Eveking, all of Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Fed. Rep. of Germany

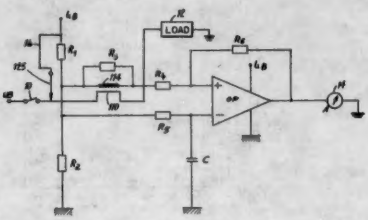
Filed Sep. 27, 1979, Ser. No. 79,600

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842470; Feb. 19, 1979, 2906263

Int. Cl.³ G01R *31/02, 19/15*

U.S. Cl. 324—133 12 Claims

1. A device for monitoring DC current conducted to a grounded load from a supply voltage source through a conductor about which a magnetic field is established by said current, comprising measuring coil means physically arranged in parallel with the conductor and operatively positioned within said magnetic field for sensing changes in current conducted to the load, an operational amplifier having non-inverting and inverting input terminals, an output terminal and a feedback resistance connected between the output terminal and the non-inverting input terminal, a grounded capacitor connected to the inverting input terminal, a series resistor connecting the measuring coil means output to the non-inverting input terminal, an electrical fault indicator connected to the output terminal, and voltage divider means interconnected between the source and ground for regulating voltages applied to the measuring coil means and the inverting input terminal of the operational amplifier, said measuring coil means having its input connected to said voltage divider, and said operational amplifier having its inverting input terminal connected to said voltage divider through a resistor.



4,354,156

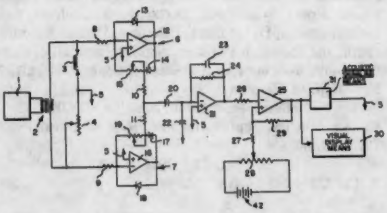
DEVICE FOR DETECTING FERROMAGNETIC MATERIALS

Stanley P. Kennedy, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 841,449, Oct. 12, 1977. This application May 5, 1980, Ser. No. 146,778

Int. Cl.³ G01N *27/72*

U.S. Cl. 324—228 6 Claims



1. Apparatus for detecting small rapidly moving ferromagnetic objects comprising:

(a) a source of alternating current;

(b) an inductive sensing coil having a magnetic field, powered by said source of alternating current;

(c) a balancing impedance in series connection with said inductive sensing coil, said balancing impedance being adjusted in a manner such that voltage amplitudes across said inductive sensing coil and said balancing impedance are approximately equal in the absence of ferromagnetic material in said coil's magnetic field;

(d) first and second means for rectifying electrical signals, said first means half-wave rectifying a signal appearing across said inductive sensing coil, and said second means half-wave rectifying a signal appearing across said balancing impedance, said first and second rectifying means simultaneously producing half-wave rectified signals of oppposite polarity.

(e) summing means joining the simultaneous outputs of said

first and second rectifying means and producing an electrical signal proportional to the algebraic sum of the signals produced by said first and second rectifying means;

(f) means for sensing a rapidly repetitive change in the electrical signal produced by said summing means in response exclusively to the rapid passage of ferromagnetic objects in succession through said coil's magnetic field;

(g) a band-pass filter for blocking DC voltage interposed between the junction of said summing means and said means for sensing a change in the electrical signal produced by said summing means; and

(h) means for indicating the sensed change in said electrical signal whereby the number of said objects may be counted.

4,354,157

METHOD OF AND DEVICE FOR DETERMINING A NUCLEAR SPIN DENSITY DISTRIBUTION IN A PART OF A BODY

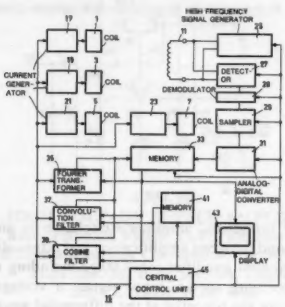
Louis F. Feiner, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,692

Claims priority, application Netherlands, Jun. 27, 1979, 7904986

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—312 **6 Claims**



1. A method of determining a nuclear spin density distribution in a part of a body, comprising the following steps:

a. the generating of a stationary and uniform magnetic field,

b. the excitation of nuclear spins in a preselected slice so that the nuclear spins in this slice are oriented transversely of the direction of the uniform field,

c. the subsequent observation and periodic sampling of a free induction signal which is generated by the nuclear spins situated in the slice, the nuclear spins being influenced by at least two gradient magnetic fields whose field directions extend in the direction of the uniform magnetic field, the directions of the field gradients being perpendiculr with respect to each other, a first one of said gradient magnetic fields being stationary and the second field being amplitude modulated as a function of the time, a number of N·M samples being taken during a measuring period T,

d. the Fourier transformation of the number of samples in order to obtain nuclear spin density data concerning a nuclear spin density distribution at points which are situated on rows and columns in the selected slice, the rows extending parallel to the gradient direction of the modulated magnetic field, a resolution of the nuclear spin density distribution in the selected slice in the direction of a row being determined by the intensity and the frequency of the modulated field and in the direction of a column by the measuring period T and the intensity of the stationary gradient magnetic field,

characterized in that the data obtained from the Fourier transformation, concerning a spin density distribution at points in each row, are convoluted with a weighting function in order to determine a nuclear spin density characteristic number having an index n, said weighting function comprising:

(a) the value 1 for the nuclear spin density data having the index 2n for $|2n| \leqq N$,

(b) the value $(-1)^{n-n'}/(N \cdot \sin \{(n-n'+\frac{1}{2}) \cdot \pi/N\})$ and $(-1)^{n-n'}/(N \cdot \tan \{(n-n'+\frac{1}{2}) \cdot \pi/N)$ for the nuclear spin data with an index $2n'-1$ for $|2n'-1| < N$, N being odd and even, respectively,

(c) the value 0 for the nuclear sin density data having the index $2n' \neq 2n$, n' and n being real and integer variables for the measured nuclear spin density data and the nucelar spin density characteristic numbers, respectively, N being the maximum number of nuclear spin density characteristic numbers in a row.

4,354,158

CIRCUIT ARRANGEMENT FOR GENERATING A SAMPLING PULSE TRAIN FOR A PERIODIC SIGNAL

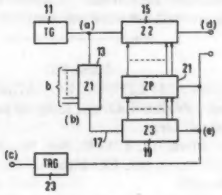
Bayati, Abutorab, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,383

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840065

Int. Cl.³ H03K *3/64*

U.S. Cl. 328—75 **3 Claims**



1. A circuit arrangement for generating a sampling pulse sequence for a periodic signal comprising:

(a) a clock pulse generator;

(b) a first presettable backward counter which acts as a first frequency reducer, having the output of said clock pulse generator as an input, said first presettable backward counter having a step down ratio equal to a number of sampling points uniformly distributed over the period T of the signal and providing carry output pulses.

(c) a second presettable backward counter which acts as a second frequency reducer, having the output of said clock generator as an input and furnishing the sampling pulse sequence at its output;

(d) a forward counter having the carry output pulses of said first presettable backward counter as inputs;

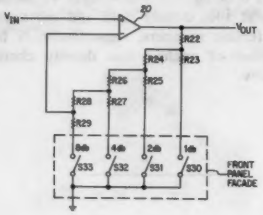
(e) an intermediate storage device, bit outputs of said forward counter being connected to the bit inputs of said intermediate storage device and bit outputs of the intermediate storage device connected to setting inputs of said second presettable backward counter so as to set the step down ratio of said second presettable backward counter; and

(f) means to provide a reset input to said forward counter and a carry control input to said intermediate storage device for each period T of the signal.

4,354,159
PRESCRIPTION ATTENUATOR HAVING CASCADED L-PAD SECTIONS

Ian A. Schorr, Chicago, and Mark J. Beegle, Lisle, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 2, 1981, Ser. No. 230,215
Int. Cl.³ H03H *11/24, 7/24*
U.S. Cl. 330—86 **6 Claims**

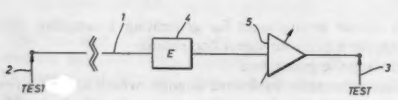


1. A prescription attenuator network, comprising a plurality of cascaded L-pad attenuator sections, each said section having a series and shunt impedance and a single switch with values selected so that the section input impedance is larger than the output impedance of the preceding section and the input impedance of each section is larger than the input impedance of the previous section in the network, and each attenuator section further includes an input and output terminal having connected therebetween said series impedance, and said shunt impedance is connected between said section output terminal and said switch so that upon activation thereof series impedance current is diverted away from subsequent attenuator sections to thereby produce a desired section attenuation, and multiple attenuator section activations produce a corresponding increase in the overall network attenuation.

4,354,160
AMPLITUDE EQUALIZER

Lyle R. Pierce, Portland, Oreg., assignor to Kentrox Industries, Inc., Portland, Oreg.

Filed Jul. 1, 1980, Ser. No. 165,072
Int. Cl.³ H03F *3/68*
U.S. Cl. 330—107 **1 Claim**

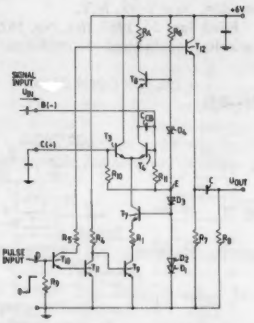


1. An amplitude equalizer circuit, comprising:
(a) circuit input and circuit output terminals;
(b) a filter section connected to the circuit input terminal;
(c) an adjustable-gain amplifier section connected to the circuit output terminal;
(d) an adjustable-ratio mixer section connected between said filter section and said amplifier section, said mixer section also being connected to the circuit input terminal, said mixer section including adjustable resistor-divider means having a range of settings, the output of said mixer section at one extreme of said setting range being independent of the output of said filter section, said resistor-divider means including:
(i) first and second resistors with a node between them, the other side of said first resistor being connected to said circuit input terminal, and the other side of said second resistor being connected to the input of said amplifier section;
(ii) a potentiometer connected to said node between the first and second resistors and having an adjustable wiper contact;
(iii) a third resistor connected between said wiper contact and the output of said filter section,
the output voltage of said mixer section being constant and independent of the potentiometer setting, for a given constant input voltage at a single predetermined frequency.

4,354,161
H.F. BROADBAND AMPLIFIER

Günter Hasch, Heilbronn, and Willy Minner, Schwaigern, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,864
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908741
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—254 **15 Claims**



1. In an HF broadband amplifier switchable by an external control command between amplification and attenuation, comprising a differential amplifier input stage including two transistors and receiving an a.c. input signal, a voltage divider circuit for setting the potential at the differential amplifier and connected between the poles of the supply voltage, a bypass or discharge current circuit through which the d.c. current maintaining the d.c. voltage present at an operating resistor flows in the switched off condition of the differential amplifier, the improvement comprising an additional transistor having its collector-emmiter path connected in a collector current circuit of at least one said transistor of said differential amplifier for attenuating the a.c. signal present at said amplifier input stage in the switched off condition, and wherein said operating resistor lies in the collector current circuit in which said additional transistor is connected, said additional transistor is connected between said operating resistor and the collector of said at least one transistor of said differential amplifier, the base of said additional transistor is operated in base connection and switched to a reference potential of low resistance in HF terms to reduce the capacitative coupling between the input and output of said amplifier circuit, and said bypass or discharge circuit is connected to a connection point between said operating resistor and said additional transistor.

4,354,162
WIDE DYNAMIC RANGE CONTROL AMPLIFIER WITH OFFSET CORRECTION

John W. Wright, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 9, 1981, Ser. No. 232,757
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—260 **4 Claims**

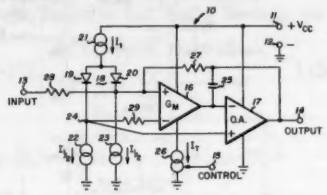
1. A control amplifier circuit having a frequency response

that can be varied in response to a control voltage, said circuit comprising:

a variable transconductance amplifier having a differential input;

means responsive to said control voltage for varying the current in said transconductance amplifier;

a pair of back to back diodes coupled in series across said differential input;



means for forward biasing said diodes whereby the linearity of said amplifier is enhanced;

negative feedback means coupled to the noninverting input of said amplifier to limit the gain thereof; and

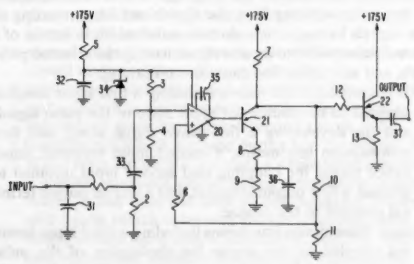
a resistor coupled in series with the inverting input of said amplifier whereby the offset introduced into said amplifier by said means for varying is compensated.

4,354,163

HIGH VOLTAGE BUFFER AMPLIFIER

David S. Kato, Fountain Valley, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Apr. 30, 1980, Ser. No. 145,109
Int. Cl.[3] H03F *1/34, 3/68*
U.S. Cl. 330—293 12 Claims



1. An amplifier circuit comprising, in combination:

an input impedance matching stage isolated from remaining portions of said circuit;

a first amplification stage connected to said impedance matching stage, comprising, in series, an operational amplifier and a transistor;

a feedback loop connected between an output of said transistor and an input of said operational amplifier, said feedback loop consisting solely of resistive components; and

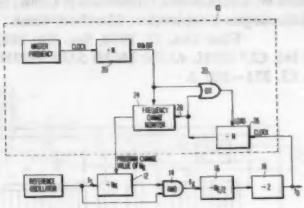
a second amplification stage connected to said first amplification stage, said second stage comprising an emitter follower transistor network, wherein said second stage is isolated from said operational amplifier.

4,354,164

DIGITAL PHASE LOCK LOOP FOR TIM FREQUENCY

Shanti S. Gupta, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,671
Int. Cl.[3] H03L *7/08*
U.S. Cl. 331—1 A 8 Claims



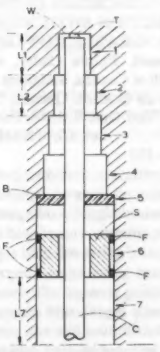
1. A digital phase-lock loop for effecting programmed changes in the desired output frequency f_D of a frequency synthesizer, said output frequency being derived from a reference frequency f_S comprising; means defining a synchronizing pulse occurring at a first frequency representative of a predetermined period of a master frequency, means defining a second frequency representative of said output frequency, means for counting bits of said output frequency occurring between a one synchronizing pulse and a subsequent synchronizing pulse to a fixed number and providing an output pulse, and a frequency change monitor to compare the correlation of the output pulse with a synchronizing pulse, and to effect a programmed frequency change of said output frequency f_D in said means defining a second frequency in accordance with a predetermined digital logic relationship if and only if, said second frequency differs from said first frequency.

4,354,165

TIME-DELAY-TRIGGERED TRAPATT OSCILLATOR HAVING DELAY LINE WITH PROGRESSIVELY INCREASING IMPEDANCE

Robert Davies; Barrie H. Newton, both of Copthorne, and Peter L. Booth, Reigate, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,892
Claims priority, application United Kingdom, Jul. 16, 1979, 7924638
Int. Cl.[3] H03B *9/14*
U.S. Cl. 331—96 4 Claims



1. A time-delay-triggered TRAPATT ocillator arrangement comprising a TRAPATT diode electrically-connected across one end of a length of delay line, said delay line having a

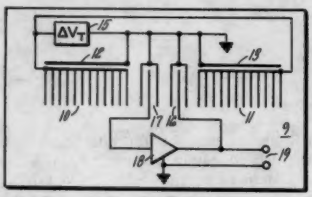
progressively increasing impedance followed by a step decrease in impedance, as distance from the diode increases, said step decrease forming a trigger element for the diode.

4,354,166

CARRIER CONCENTRATION CONTROLLED SURFACE ACOUSTIC WAVE RESONATOR AND OSCILLATOR

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 23, 1980, Ser. No. 199,871
Int. Cl.³ H01L 41/04; H03B 5/32; H03H 9/25, 9/42
U.S. Cl. 331—107 A **3 Claims**



1. An improved carrier concentration controlled, surface acoustic wave, variable reflector resonator comprising:

a piezoelectric and semiconductive substrate;

a pair of arrays of reflector elements disposed on opposite sides of a transducer region on a surface of said substrate; and

an acoustoelectric transducer disposed on said surface of said substrate between said reflector arrays; characterized by:

the reflector elements in each of said arrays being connected together and forming a segmented rectifying contact with said substrate;

an ohmic connection to said substrate formed near each of the reflective elements of each of said arrays; and

means for impressing variable voltage between said reflector arrays and said ohmic contacts for altering the concentration of carriers beneath and between said reflector elements, whereby variations in said voltage after the potential and velocity of the surface acoustic wave at the surface of said substrate, thereby to control the resonant frequency of said resonator.

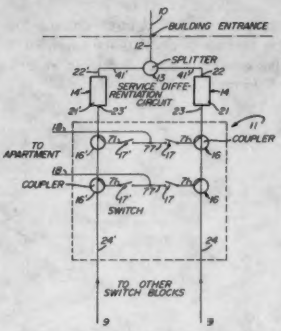
4,354,167

MULTI-SUBSCRIBER DIFFERENTIATION AND DISTRIBUTION SWITCHING SYSTEM HAVING INTERCHANGEABLE DIFFERENTIATING CIRCUITS

Gerard Terreault, Pointe Claire, and Yves Deflandre, Pierrefonds, both of Canada, assignors to 501 Centre de Recherche Industrielle du Quebec, Quebec, Canada

Filed Dec. 8, 1980, Ser. No. 214,281
Int. Cl.³ H03H 7/46
U.S. Cl. 333—103 **6 Claims**

1. A differentiation and distribution switching system for connecting selected ones of a plurality of subscriber lines for receiving a desired signal, said system comprising at least two differentiation circuits, one of said differentiation circuits permitting passage of a first selected signal portion of a composite signal connected to its input, the other of said differentiation circuits permitting passage of a second selected signal portion of said composite signal, said composite signal being received from a main distribution line and connected to a splitter circuit to connect to an input of each said two differentiation circuits, and a switching circuit having a plurality of couplers connected to an output line of said differentiation circuits with a switch connected to each said couplers and an associated one of said subscriber lines whereby to connect a signal on said output line of said differentiation circuits to selected ones of said subscriber lines, each said differentiation circuit having a



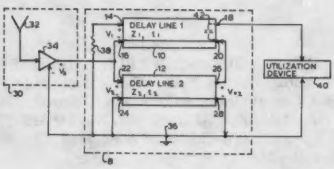
detachable support whereby to be easily interchanged without alteration to said switching circuit.

4,354,168

DELAY LINE CANCELER

Victor K. Fay, Sunnyvale, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Sep. 4, 1980, Ser. No. 183,914
Int. Cl.³ H01P 1/20, 1/212, 9/00
U.S. Cl. 333—156 **8 Claims**



1. A delay line canceler for coupling a source of pulse signals to a device for utilizing the pulse signals and for converting all pulse signals having a time domain pulse width in excess of a selected pulse width to a pulse signal having the selected pulse width, and said delay line canceler comprising:

first transmission line means including a first input terminal coupled to the source for application of the pulse signals and for developing a first wave signal along said first transmission line means, a second input terminal, impedance means for coupling said second input terminal to ground, a first output terminal, and a second output terminal coupled to the device;

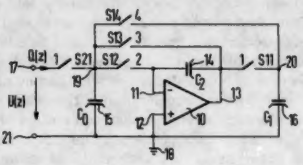
second transmission line means including a third input terminal coupled to the source for application of the pulse signals and for developing a second wave signal along said second transmission line means, a fourth input terminal coupled to ground, a third output terminal coupled to said first output terminal for summing the outputs of said first and said second transmission line means, and a fourth output terminal coupled to ground, said third output terminal being responsive to said second wave signal for developing a voltage with respect to said fourth output terminal having the same polarity as the voltage of the pulse signals applied to said third input terminal, said second output terminal being responsive to said first wave signal for developing a voltage with respect to said first output terminal having the opposite polarity as the voltage of the pulse signals applied to said first input terminal.

4,354,169

SWITCHED-CAPACITOR FILTER CIRCUIT HAVING AT LEAST ONE SIMULATED INDUCTANCE HAVING CONTROLLED SWITCHES, CAPACITORS, AND AN AMPLIFIER

Josef Nossek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 7, 1981, Ser. No. 223,032
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001969
Int. Cl.³ H03H *11/48*
U.S. Cl. 333—173 **5 Claims**



1. In a switched-capacitor filter circuit which may be adapted to simulate a single-sided inductor or a parallel resonance circuit having a resonance frequency greater than one-sixth of the filter circuit sampling frequency or a parallel resonance circuit having a resonance frequency which is less than said sampling frequency, said filter circuit having an operational amplifier with a feedback capacitor interconnected between an output and an inverting input thereof, said amplifier also having a non-inverting input connected to a reference potential, said filter circuit operated by first, second, third, and fourth cyclically sequential clock phases having non-overlapping duty times and identical periods, and said filter circuit further having first and second input terminals, the improvement comprising:

a first switch which is closed during said second clock phase and which is interconnected between the inverting input of said amplifier and a first circuit node;

a first capacitor interconnected between said first circuit node and said second input terminal and the reference potential;

a second switch which is closed during said fourth clock phase and which is interconnected between said first circuit node and a second circuit node;

a second capacitor interconnected between said second circuit node and the reference potential;

a third switch which is closed during said first clock phase and which is interconnected between the output of said operational amplifier and said second circuit node;

a fourth switch which is closed during said third clock phase if said filter circuit is to simulate a single-sided inductor or a parallel resonance circuit having a resonance frequency which is less than one-sixth of said sampling frequency, said fourth switch otherwise always remaining open, said fourth switch being interconnected between the output of said operational amplifier and said first circuit node; and

a fifth switch which is closed during said first clock phase and which is interconnected between the first input terminal and said first circuit node.

4,354,170

THERMOSTAT WITH POSITIVE OFF ELEMENT

Gerard H. Risacher, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

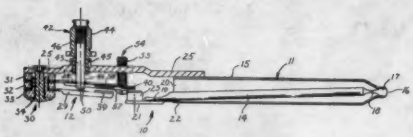
Filed Mar. 31, 1980, Ser. No. 135,897
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—334 **12 Claims**

1. An improved thermostat of the type having

a base;

a switch on said base including a first contact arm attached at one end to the base and a second contact arm attached at one end to the base, the first and second contact arms being spring-biased with a contact portion of each contact arm being resiliently urged toward engagement with a contact portion of the other arm, engagement of said contact portions closing said switch;

a variable control means which engages the second contact arm and moves the second contact arm laterally against its spring bias to a position corresponding to a desired thermal condition; and



a temperature-responsive assembly mounted to the base and including a projecting member which moves in response to the changes in thermal conditions, the projecting member engaging the first contact arm to move it against its spring bias out of contact with the second contact arm in response to a thermal condition exceeding the desired condition set by the variable control means;

wherein the improvement comprises

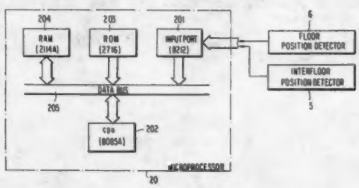
positive-off means on the base and having a portion which engages the first contact arm when the variable control means is set in an extreme position to hold the first contact arm away from the second contact arm.

4,354,171

ELEVATOR POSITION DETECTOR DEVICE

Masayuki Yoshida, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,506
Claims priority, application Japan, Nov. 5, 1979, 54-143135
Int. Cl.³ B66B *3/02*
U.S. Cl. 340—21 **3 Claims**



1. An elevator position detector device, comprising:

an elevator car for travelling in either an upward or downward direction within a hoistway and selectively stopping at floor landings,

interfloor position marking means disposed in said hoistway in an intermediate zone between adjacent floors,

floor level position marking means disposed in said hoistway at a position to mark the level of a landing floor,

at least one first detector for detecting said elevator car passing said interfloor position marking means,

at least one second detector for detecting said elevator car when it is located at said floor level position marking means, and

position detecting means for generating and storing a car position signal in response to output signals of said first and second detectors, and for modifying said car position signal only after said first and second detectors have detected said elevator car passing said interfloor position

marking means and said elevator car at said floor level position marking means in the stated order.

4,354,172

SYSTEM OF GENERATING SYNCHRONIZING SIGNALS IN A NAVIGATIONAL LIGHT GROUP

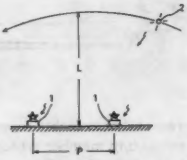
Isaburo Takeyasu, Takarazuka; Koichi Nagamachi, Kobe, and Yuji Sato, Kawanishi, all of Japan, assignors to Zeni Lite Buoy Co., Ltd., Ikeda, Japan

Filed Aug. 5, 1980, Ser. No. 175,420

Claims priority, application Japan, Aug. 14, 1979, 54-104197

Int. Cl.³ G08G *3/00*

U.S. Cl. 340—29 **9 Claims**



1. A navigation light adapted for synchronous operation with other lights of like kind in a group, comprising:

means for receiving radio signals transmitted from an orbital satellite and for extracting from such radio signals a special signal;

a lamp;

means for flashing the lamp in response to a flash signal; and

means for generating a flash signal in response to the special signal.

4,354,173

ARRANGEMENT FOR OBTAINING AN INDICATION OF EFFICIENCY OF OPERATION OF A MOTOR VEHICLE

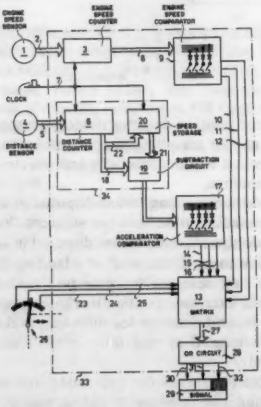
Peter Kuhn, Villingen-Schwenningen; Max Kolar, Aalen; Robert Weber, Brigachtal, and Siegfried Koch, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,796

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928318

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—52 F **5 Claims**



1. An arrangement for obtaining an indication concerning the economy of operation of a motor vehicle, comprising a plurality of sensors for detecting different vehicle operating factors, including at least a first sensor for detecting engine speed, a second sensor for detecting distances travelled by the vehicle, and a third sensor for detecting the position of the engine throttle; means associated with each of said sensors for transmitting information corresponding to the operating factors detected by said sensors, said transmitting means including an acceleration measuring device coupled to said second sensor for determining the acceleration of the vehicle; means coupled to said transmitting means for forming operating condition values corresponding to the information provided by said transmitting means, said forming means including a first comparator which includes means for selectively fixing a first set of threshold values to provide first output signals in accordance with the engine speed detected by said first sensor, wherein said first output signals each correspond to a certain speed range determined by said first set of threshold values, a second comparator including means for selectively fixing a second set of threshold values to provide second output signals in accordance with the acceleration of the vehicle determined by said acceleration device so that said second output signals each correspond to an acceleration range determined by said second set of threshold values wherein said acceleration range is selected at least from among a set of ranges including $-b<a<+b, a>b$ and $a<-b$ wherein a is the vehicle acceleration and b is a certain positive value; combining means coupled to said forming means for combining and evaluating the operation condition values in accordance with a predetermined evaluation pattern wherein the combined operating condition values are rated, said combining means including a matrix for encoding said first and said second sets of output signals and the output of said third sensor into a combined code word and means for according one of a number of ratings to different groups of combined code words; and at least one signal transmitter for providing a number of signalling conditions each of which corresponds to a different group of equally rated combined code words.

4,354,174

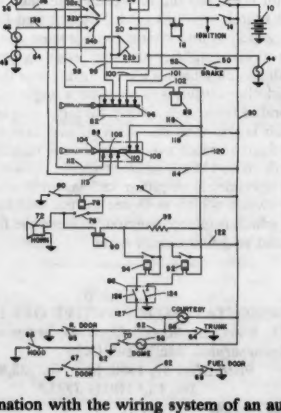
ANTI-THEFT DOOR ACTUATED HAZARD LIGHT AND HORN CIRCUITS FOR AUTOMOBILES

William A. Heidman, Jr., 4604 Robbins, San Diego, Calif. 92122

Filed Apr. 14, 1980, Ser. No. 139,789

Int. Cl.³ B60Q *1/46;* B60R *25/10*

U.S. Cl. 340—63 **13 Claims**



1. In combination with the wiring system of an automobile having a battery with a positive terminal and a negative terminal, the negative terminal of the battery being connected to a ground, at least one ignition switch having a first side con-

nected to the positive terminal of the battery, a pair of left and right forward turn signal lamps, a pair of left and right rear turn signal lamps, a pair of left and right rear brake lamps, a turn signal switch assembly, a flasher, a brake light switch, a plurality of conductors interconnecting the lamps, ignition switch, brake light switch, flasher and turn signal switch assembly to permit selective flashing of the left or right turn signal lamps and selective simultaneous illumination of both of the brake lamps, the wiring system further including a horn, and at least one interior light having a first terminal connected to the positive terminal of the battery and a second terminal connectable to the ground by the closing of any one of a plurality of automobile body mounted switches through the opening of a corresponding one of a plurality of structural access panels of the automobile, the improvement comprising:

an anti-theft switch;

a bypass switch;

an arming switch; and

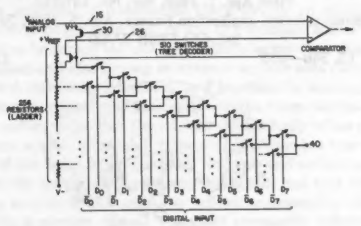
means for interconnecting the anti-theft switch, the bypass switch, and the arming switch with the battery, the flasher, the turn signal lamps, the brake lamps, the turn signal switch assembly, the horn and the interior light so that when the ignition switch is open, closing the anti-theft switch and the bypass switch without closing the arming switch will cause intermittent flashing of the turn signal lamps and the brake lamps to provide a hazard mode, and closing the anti-theft switch and the arming switch without closing the bypass switch and thereafter opening of any one of the structural access panels will result in intermittent blasting of the horn and flashing of the turn signal lamps and the brake lamps to provide an anti-theft mode.

4,354,175

ANALOG/DIGITAL CONVERTER UTILIZING A SINGLE COLUMN OF ANALOG SWITCHES

Ira L. Goldstein, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed May 1, 1980, Ser. No. 145,550
Int. Cl.³ H03K *13/11*
U.S. Cl. 340—347 AD **3 Claims**



1. A method for converting an analog signal to a digital voltage level comprising:

inputting high and low reference voltages to a series resistor ladder network having incremental levels;

comparing the analog signal and the center incremental voltage level of the resistor ladder network;

selecting an incremental level midway between the center incremental level and the high reference voltage or the low reference voltage depending on whether the analog signal voltage level is greater or lesser, respectively, than the center incremental voltage level;

comparing the analog signal to the selected incremental voltage level;

repeating the selection of an incremental voltage level and comparison of the analog signal and selected incremental voltage level until the incremental voltage levels are exhausted whereby the incremental voltage level nearest the analog signal to voltage level is determined;

precharging with a voltage level a gate terminal of a plurality of series field effect transistors coupled between each incremental voltage level and a comparator such that each of the field effect transistors is in the off state;

removing the precharging voltage at the gates of the plurality of series field effect transistors when a decode tree, coupled to the gates of the plurality of field effect transistors, enables one of the plurality of series field effect transistors; and

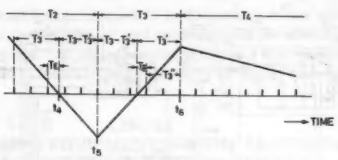
holding the unselected series field effect transistors off by the remnants of the precharge voltage held by the respective gate capacitances.

4,354,176

A-D CONVERTER WITH FINE RESOLUTION

Hiroshi Aihara, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Aug. 14, 1980, Ser. No. 178,028
Claims priority, application Japan, Aug. 27, 1979, 54-109565
Int. Cl.³ H03K *13/02, 13/20*
U.S. Cl. 340—347 NT **17 Claims**



1. An A-D converter comprising:

an integrator;

first supply means for supplying the integrator with an analog input signal to be converted by integration during a first integration period from a predetermined level to obtain an integrated output corresponding to the magnitude of the analog input signal;

a first reference signal source for providing a first reference voltage of opposite polarity than that of said analog input signal;

a clock pulse source for generating clock pulses;

second supply means for supplying, in synchronism with the clock pulses, the integrator with said first reference signal, for integration for a second integration period terminating with the Mth clock pulse after the integrator output passes said predetermined level, where M is a non-zero positive integer;

a second reference signal source for providing a second reference signal of the same magnitude as the first reference signal but opposite in polarity;

third supply means for supplying, in synchronism with the clock pulses, the integrator with said second reference signal, for integration for a third integration period, said third integration period being selected to end on the Nth clock pulse after the integrator output again crosses said predetermined level, N being larger than one;

fourth supply means for supplying, in synchronism with the clock pulses, the integrator with a third reference signal of the same polarity as said first reference signal for causing the output of said integrator to change at a rate of an integral fraction of the integration rate of the integrator during said second integration period, until the integrator output reaches said predetermined level, thus defining a fourth integration period;

a one-directional counter for selectively counting the clock pulses during said second and third integration period, said counter having plural counting stages each corresponding to a respective bit of the count of said clock pulses;

zero dead band control means for interrupting the counting

operation of the counter selectively in said second and third integration periods by a count number corresponding to a period of time that is twice as long as said third integration period, and

means for switching, for said fourth integration period, the counting stage of the counter supplied with the clock pulses to a counting stage of one lower order than for said counting during said second integration periods.

4,354,177

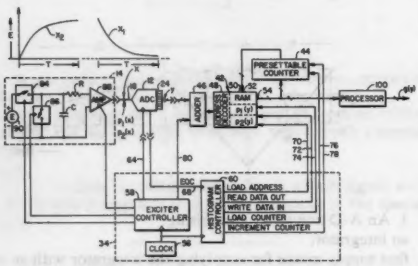
METHOD AND APPARATUS FOR CALIBRATING AN ANALOG-TO-DIGITAL CONVERTER FOR A DIGITAL-TO-ANALOG CONVERTER TEST SYSTEM

Edwin A. Sloane, Los Altos, Calif., assignor to Fairchild Camera & Instr. Corp., Mountain View, Calif.

Continuation-in-part of Ser. No. 264,928, May 18, 1981, which is a continuation-in-part of Ser. No. 204,979, Nov. 7, 1980. This application Jul. 31, 1981, Ser. No. 288,965

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 CC **12 Claims**



1. A method for obtaining a transfer characteristic of an analog-to-digital converter under test, said analog-to-digital converter having an analog input and a digital output, said method comprising the steps of:

exciting said analog-to-digital converter input with a first analog signal of a first known function, said first known function having a first amplitude probability density function;

detecting digital output signals at said analog-to-digital converter output as values unique to selected combinations of output bits;

counting the number of occurrences of each selected output bit combination in response to said first analog signal thereby to produce a first measured histogram, said histogram being proportional to a second amplitude probability density function characterizing said transfer characteristic of said analog-to-digital converter under test; and

integrating the ratio of said second amplitude probability density function from said first measured histogram to said first amplitude probability density function of said first analog signal over the range of values for said transfer characteristic in order to obtain said transfer characteristic.

4,354,178

ELECTRODYNAMIC BALANCE FOR A DETECTION

Lambert R. Janssen, 262 Ave. F. Roosevelt B.10, 1050 Brussels, Belgium

Filed Oct. 19, 1979, Ser. No. 86,482

Claims priority, application Belgium, Oct. 26, 1979, 46650

Int. Cl.³ G08B *13/18*

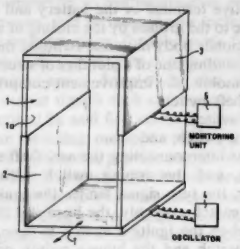
U.S. Cl. 340—572 **4 Claims**

1. An electrodynamic balance for systems of detection of ferrous or non-ferrous metallic objects having a gate frame defining a direction of advance for the objects to pass therethrough, comprising

a first loop means for transmitting electromagnetic waves,

a second loop means for receiving said electromagnetic waves,

both said loop means being cooperatively mounted diagonally opposite each other on said gate frame for creating a fixed magnetic field which is oblique transversely to said direction of advance and which is substantially constant at each point, respectively, between both said loop means



under any orientation and position, respectively, of the objects in the magnetic field, wherein

the gate frame is three-dimensionally rectangular,

each of said loop means is formed in an L-shape and has a vertex, said vertices facing away from each other, said loop means are inverted relative to each other and one of said loop means is higher than the other and said loop means are disposed in diagonally opposite corners of the gate frame.

4,354,179

DEVICE CONTROLLED BY INCLINATION OF THE HEAD OF A DRIVER PREVENTING HIS FALLING ASLEEP

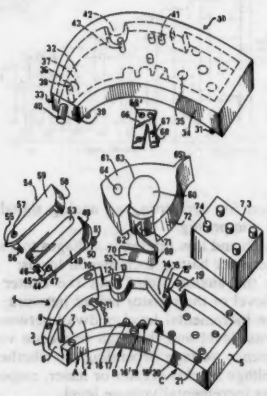
Jean-Claude Fourcade, 5 square Jasmin, F-78150, Le Chesnay, France

Filed Apr. 7, 1980, Ser. No. 137,910

Claims priority, application France, Apr. 5, 1979, 79 08647

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—575 **11 Claims**



1. A device controlled by the inclination of the head of a driver to prevent the driver from falling asleep, said device comprising detector means for detecting the position of the driver's head, warning means operatively connected to said detector means to receive a warning signal therefrom and adapted to emit an audible warning on receiving such signal,

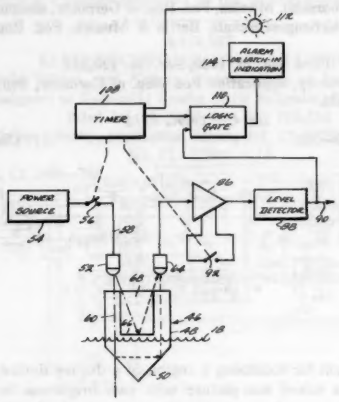
and a battery support for supporting a battery serving to power said device, said detector means, warning means and battery support all being housed within a housing and wherein said housing is adapted to match the contour of the ear, said detector means being adapted to pivot relative to said device by movement of finger means extending to the exterior of said housing.

4,354,180

ELECTRO-OPTICAL LIQUID LEVEL SENSOR

Robert C. Harding, Dallas, Tex., assignor to Genelco, Inc., Dallas, Tex.

Filed Dec. 19, 1980, Ser. No. 218,454
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—619 **11 Claims**



1. A fail-safe self-checking electro-optical low liquid level sensor, comprising:

a probe including a transparent body having an index of refraction larger than that of the dry medium above the liquid to be sensed but not appreciably larger than that of the liquid and also having an exterior surface area causing internal reflection therefrom, to a location for sensing by an electro-optical transducer, of a light beam shined on said surface area from the interior of said body when said surface area is immersed in the dry medium but causing exit of the beam from said body through said surface area when the latter is immersed in the liquid, and said body being provided with optically reflective means for intercepting a portion of said beam and constantly reflecting such portion to said location irrespective of whether said exterior surface area is immersed in the dry medium or in the liquid.

4,354,181

VAPOR LAMP INDICATING DEVICE

Barry L. Spletzer, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed Nov. 3, 1980, Ser. No. 202,916
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—642 **11 Claims**

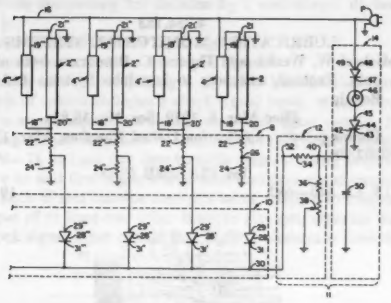
1. A vapor lamp assembly for use with a source of electricity comprising:

a plurality of current limiting ballast devices electrically connected to the electricity source;

a plurality of vapor lamps each having a first terminal supplied an electric potential through a respective current-limiting ballast device;

a plurality of means, each communicating with a respective first terminal of a like number of said vapor lamps, for producing a plurality of first signals proportional to the electric potential of its respective ballast device;

means for summing said first signals from said plurality of first signal producing means to produce a second signal at the output of said summing means; and



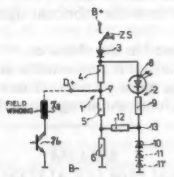
a trigger circuit means coupled to said summing means output responsive to the level of said second signal for alerting an operator when said second signal is above a first predetermined level to indicate the presence of an inoperative lamp.

4,354,182

MONITORING EQUIPMENT FOR THE ELECTRICAL SUPPLY SYSTEM IN A MOTOR VEHICLE

Wunibald Frey, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,227
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926705
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—650 **12 Claims**



1. A malfunction indicator for a vehicle having an electrical system comprising a battery having a positive (B+) and negative (B−) output terminal, switch means (ZS) connected to said positive output terminal, a generator, and voltage regulator means having a regulator input (D+) connected to said generator, comprising

indicator means (8), for furnishing a visual indication in response to at least a minimum voltage applied thereto, said indicator means having a first terminal connected to said switch means and a second terminal;

a reference voltage source (10) connected between said second terminal of said indicator means and said negative output terminal of said battery for maintaining said second terminal at said reference voltage, said reference voltage source and said indicator means thereby forming a series circuit;

voltage divider means (4,5,6) comprising a plurality of series-connected resistors connected in parallel with said series circuit, said voltage divider means having a voltage divider tap (7); and

means for connecting said voltage divider tap to said regula-

tor input, whereby said indicator means furnishes said visual indication when the voltage at said regulator input and therefore at said voltage divider tap is substantially greater than or substantially less than the normal operating voltage at said regulator input.

4,354,183

LUBRICATION MONITORING SYSTEMS

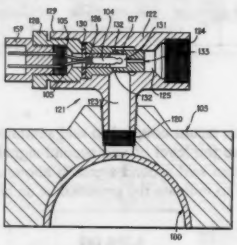
Michael W. Weeks, and Thomas C. Brandram, both of Plymouth, England, assignors to Interlube Systems Ltd., Great Britain

Filed Mar. 8, 1979, Ser. No. 18,831

Claims priority, application United Kingdom, Mar. 13, 1978, 09802/78

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—682 **19 Claims**



1. A bearing assembly including:

a lubricated bearing,

an assembly interposed in the lubricant flow path at or adjacent the bearing, the assembly comprising a housing defining a chamber, first passage means extending from the chamber to a first port for connection to a lubricant supply and second passage means extending from the chamber to a second port connected to the lubricant flow path through the bearing, the first passage means being so narrow that lubricant in the chamber is substantially thermally isolated from the lubricant upstream of the chamber, and

a thermistor located in the chamber,

wherein the thermistor is connected in an electrical circuit in the self-heating mode to respond to a deleterious change in the flow of lubricant along the path.

4,354,184

DISPLAY SYSTEM FOR LOCALIZING REGIONS IN A MIXED TEXT & PICTURE DISPLAY

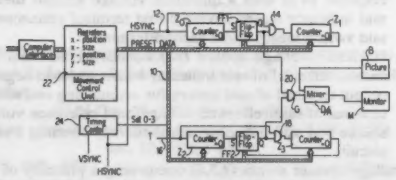
Walter Woborschil, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,232

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939489

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—709 **15 Claims**



1. A system for the localization of a region of a display device for displaying a mixed text-picture, comprising means for scanning the region to be localized, means for generating a cursor signal during scanning of such region, means for moving the position of said cursor in two dimensions in the picture of said display device, means for mixing said cursor signal with picture information so that a rectangular cursor area appears with a different brightness than the information which is presented normally, means responsive to a data input for controlling the length and width of said cursor area, whereby the size and shape of said cursor can be modified by modifying said data input, and means for periodically changing the data input to progressively alter the length and width of said cursor area.

4,354,185

DISPLAY SYSTEM FOR LOCALIZING REGIONS IN A MIXED TEXT AND PICTURE DISPLAY

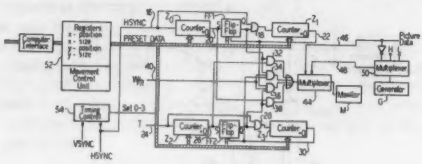
Walter Worborschil, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,234

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939458

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—709 **17 Claims**



1. A system for localizing a region of a display device for displaying a mixed text-picture with two brightness levels comprising means for scanning the region to be localized, means for generating a signal representative of an open frame formed by at least two non-parallel lines, means for moving the position of said cursor in two dimensions in the picture of said display device, means for mixing said cursor signal with picture information, means including a data input for controlling the size of said cursor by controlling the length of said lines, whereby the size of said cursor can be modified by modifying said data input, and means for periodically changing the data input for progressively reducing the size of said cursor.

4,354,186

PICTURE DISPLAY DEVICE FOR DISPLAYING A BINARY SIGNAL GENERATED BY A PICTURE SIGNAL GENERATOR AS A BINARY INTERLACED TELEVISION PICTURE

Hermanus H. H. Groothuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,884

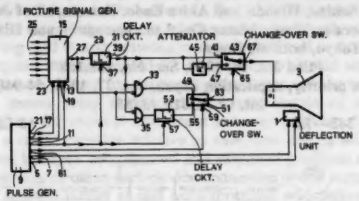
Claims priority, application Netherlands, Feb. 13, 1979, 7901119

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—728 **3 Claims**

1. A picture display device for displaying a binary picture signal generated by a picture signal generator as a twofold interlaced television picture, this picture signal generator generating the same signal pattern in the two consecutive fields of a picture, characterized in that the picture display device comprises a detection circuit for detecting signals corresponding to vertical brightness transients between lines in each field and a circuit for attenuating, in response to a signal supplied by the detection circuit and to a signal of half the field frequency, the brighter picture signal at the occurrence of said vertical brightness transients, whereby the value of the attenuated

picture signal is located between the binary values of the two relevant picture signals thereby reducing the visibility of vertical jitter of the brightness transients having the picture frequency in a picture displayed by the picture display device.



4,354,187

ELECTROCHROMIC DISPLAY DEVICE

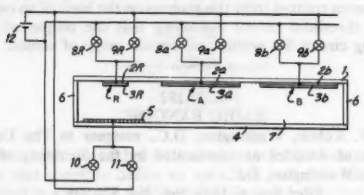
Junichi Tabata, and Noboru Kaneko, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,318

Claims priority, application Japan, Jul. 17, 1979, 54-090737

Int. Cl.³ G09G 3/16

U.S. Cl. 340—763 **4 Claims**



1. An electrochromic display device comprising:

a display electrode group comprised of transparent electrodes have electrochromic layers formed on the transparent electrodes and being divided into a coloration display electrode and a bleaching display electrode;

a counter electrode;

a refresh electrode operable to maintain the coloration degree of the coloration display electrode at a constant level and connected to receive electric charge from the counter electrode;

means for applying a voltage between the refresh electrode and the counter electrode till the current flow between the refresh electrode and the counter electrode is saturated;

means for applying a voltage between the coloration display electrode and the bleaching display electrode to change the display state; and

means for applying a voltage between the refresh electrode and the coloration display electrode.

4,354,188

DEVICE FOR DIVIDING A RECURRENT INPUT SIGNAL BY A NON-INTEGER DIVISOR F, NOTABLY BY F=N−½

Henri W. Schneider, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,285

Claims priority, application Netherlands, Mar. 16, 1979, 7902111

Int. Cl.³ G09G 1/00

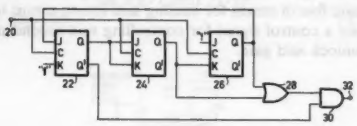
U.S. Cl. 340—814 **7 Claims**

1. An electrical circuit for the display of image data stored in a memory on a display screen of a television receiver, comprising a generator circuit for generating a periodic alternating voltage and a synchronization circuit for deriving synchronization signals for line and frame synchronization, required for the television receiver, from the period alternating voltage, characterized in that the synchronization circuit comprises at least one device for dividing a recurrent input signal; said device for dividing a recurrent input signal which alternately comprises a sequence of alternating first and second edges, a first edge being followed every time by a first interval and a second edge being followed every time by a second interval, said device comprising for division by a non-integer divisor $f=N-\frac{1}{2}$:

a first connection for the input signal;

a second connection for an output signal;

a counter circuit comprising n dynamic bistable elements, each of which includes a clock signal input, at least one data signal input, and at least one data signal output, 2^n being larger than $2N-1$, and 2^{n-1} being smaller than $(2N-1)$, at least one first bistable element being responsive to said first edges and at least one data signal output of each of said bistable elements being coupled to a signal input of at least one other bistable element, wherein the clock signal input of said first bistable element is directly



connected to said first connection without intermediate logic means, at least one second bistable element being responsive exclusively to said second edges in that its clock signal input is directly connected to said first connection without intermediate logic means, that said first and second bistable elements are JK-flipflops, the counter circuit completing a cycle of $4N-2$ counter positions during $4N-2$ successive first and second intervals, wherein during one cycle all counter positions are mutually different during first intervals and all counter positions are mutually different during second intervals, a cycle exhibiting at least two pairs of mutually equal counter positions, at least one of said pairs occurring during a directly successive pair of a first and a second interval; the connection for the input signal being coupled to an output of the generator circuit and the connection for the output signal being capable of supplying an output signal which is an integer multiple of the line synchronization signal as well as of the frame synchronization signal.

4,354,189

SWITCH AND LOCK ACTIVATING SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 849,785, Nov. 9, 1977, Pat. No. 4,189,712. This application Feb. 15, 1980, Ser. No. 121,894

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—825.31 **10 Claims**

1. An electrically operated lock system comprising in combination:

first means for locking and unlocking an access gate,

second means for operating said first means to cause said first means to unlock said gate,

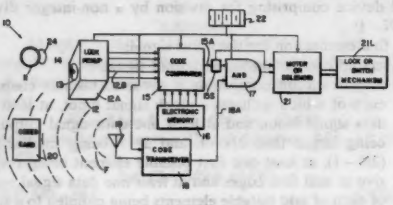
said second means including electrically controllable means and a short wave pick-up operatively connected to said electrically controllable means,

third means including a portable short wave code generating and transmitting means adapted to be carried by a person seeking to open said access gate,

fourth means connected to said pick-up of said second means and operable for electrically detecting short wave codes generated by said third means, said fourth means being

operable to activate said second means to control the operation of said first means,

said first, second and fourth means being supported on a common support, and



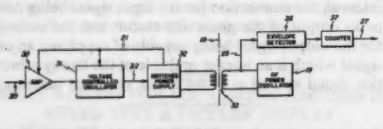
said third means being automatically operable when carried to a given range of said fourth means to generate a short wave code receivable by said pick-up and detectable by said fourth means for causing said fourth means to generate a control signal for controlling said second means to unlock said gate.

4,354,190

ROTOR MEASUREMENT SYSTEM USING REFLECTED LOAD TRANSMISSION

John M. Reschovsky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,422
Int. Cl.[3] G08C *19/16*
U.S. Cl. 340—870.18 7 Claims



1. Apparatus for obtaining physical measurement data from a body moving with respect to a stationary observer, comprising:

at least one sensor means disposed on said moving body for providing an output signal indicative of at least one such physical measurement;

an electrical energy source fixed with respect to said observer for supplying a radio frequency power signal;

means reactively coupling said radio frequency signal to said moving body for supplying operating power to an electrical load thereon;

means disposed on said moving body and responsive to said sensor output signal to effect corresponding changes in said electrical load causing amplitude variations in said radio frequency power signal;

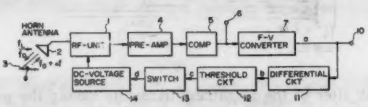
detector means fixed with respect to said observer and responsive to said radio frequency power signal for detecting said amplitude variations due to said load changes to provide an output signal characterizing said physical measurement, said load changes being reflected through said reactive coupling means.

4,354,191

GROUND-SPEED DOPPLER RADAR FOR VEHICLES

Akira Matsumura, Yokosuka; Yoichi Kaneko, Tokorozawa; Kenji Sekine, Hitode, and Akira Endo, Katsuta, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa and Hitachi, Ltd., Tokyo, both of, Japan

Filed Jul. 14, 1980, Ser. No. 168,158
Claims priority, application Japan, Jul. 27, 1979, 54-94882
Int. Cl.[3] G01S *13/58*
U.S. Cl. 343—7.5 12 Claims



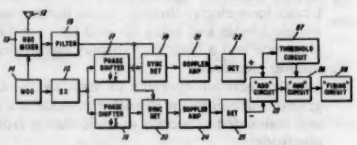
1. In a Doppler radar system wherein the speed of an object is detected from a frequency shift of microwaves emitted from an antenna carried by the object and reflected from a stationary surface; the improvement comprising a detecting circuit which detects a differential factor of the frequency shift, a threshold circuit which discriminates whether or not the output of said detecting circuit lies within a certain range of values, and a control circuit which varies the frequency of the microwaves emitted from the antenna on the basis of an output of said threshold circuit indicating that the output of said detecting circuit lies within said certain range of values.

4,354,192

RADIO RANGING

Hans W. Kohler, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 6, 1966, Ser. No. 578,938
Int. Cl.[3] G01S *13/32*
U.S. Cl. 343—14 13 Claims



1. In a continuous wave, frequency modulated ranging system for measuring the distance between two bodies by transmitting a signal from one body and receiving the echo signal from the other body, means for detecting the strength of the received signal, means for obtaining a function of the received signal having a detectable characteristic occurring at a plurality of predetermined specific ranges between said bodies, and means for detecting the simultaneous occurrence of said characteristic and a received signal strength of a predetermined value to indicate the occurrence of a predetermined range between said two bodies.

4,354,193

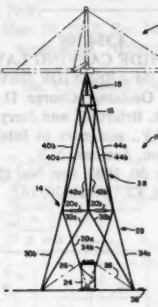
COLLAPSIBLE ANTENNA SUPPORT APPARATUS AS WELL AS A KIT FOR AND METHOD OF ASSEMBLING THE APPARATUS

William L. Werner, Cupertino, Calif., assignor to Granger Associates, Santa Clara, Calif.

Filed Jun. 9, 1980, Ser. No. 157,448
Int. Cl.[3] H01Q *3/02*
U.S. Cl. 343—882 11 Claims

1. A collapsible apparatus for supporting an antenna or other such device at a predetermined orientation with the horizontal, said apparatus comprising: a plurality of straight structural

members; means for supporting the ends of said structural members so as to form a support matrix which has a base end adapted for mounting to the ground or a like support structure and which is movable between a first collapsed position and a second extended position relative to its base end; means for moving said matrix between said collapsed and extended positions; and means adapted for connection with said antenna or other such device for supporting the latter, said antenna support means being connected with said matrix of structural members for vertical movement between a lowered position and a raised position relative to said base end as said matrix moves between its collapsed and extended positions such that an antenna or other such device connected to and supported by said support means at said predetermined orientation remains at said orientation throughout said vertical movement; said support matrix including a bottom arrangement of three A-



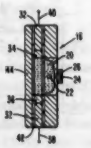
frames, each of which is formed of two of said structural members that together define an apex and base, the latter being located in a specific fixed horizontal plane, and a top arrangement of three A-frames, each of which is formed of two of said structural members that together define an apex and base, the latter being located in a horizontal plane which is vertically movable between a lowered position and a raised position relative to the base end of said matrix as the latter moves between its collapsed and extended position, and wherein said structural member supporting means includes first means for pivotally supporting the base of each of said bottom A-frames about a pivot axis in said fixed plane, second means for pivotally supporting the base of each of said top A-frames about a pivot axis in said vertically movable plane, and third means for pivotally connecting together the apex of each of said bottom A-frames with the apex of a respective one of said top A-frames.

4,354,194

WIDEBAND INK DROP GENERATOR

Joseph C. Barteck, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,089
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **19 Claims**



1. In a fluid jet drop generator including a fluid supply line connected to a source of pressurized fluid, an ink supply cavity for accepting the pressurized fluid, a nozzle plate with orifices for generating capillary streams from the ink supply cavity, and a signal input connected to a perturbation signal source, the improvement comprising:

a pair of perturbation means spaced diametrically to form side walls of the ink supply cavity;

said perturbation means being in contact with the pressurized fluid and operable to generate a reinforceable pressure zone therein; and

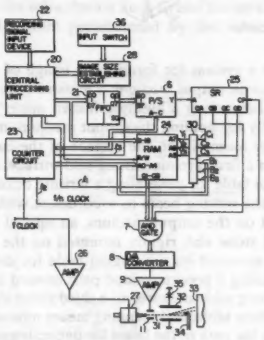
an elongated nozzle wafer having a plurality of linear orifices thereon disposed so that the center of said orifices is positioned on the pressure zone.

4,354,195

INK JET RECORDING APPARATUS

Hideyuki Oomori; Shinji Matsuoka, and Mitsuhiro Nakagaki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,694
Claims priority, application Japan, Dec. 11, 1979, 54/159743
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. An ink jet recording apparatus having a recording head for emitting a train of ink droplets towards a recording surface, in which an image is recorded by scanning the recording surface with the train of ink droplets in two directions, one being a direction of a relative movement between the recording head and the recording surface, the other being a direction substantially perpendicular to the one direction, the apparatus comprising:

means for generating a plurality of groups of unit video data, each of said unit video data groups containing staircase waveform data associated with the scanning in said other direction;

means for storing said plurality of unit video data groups;

means for generating a clock signal having a predetermined repetition frequency;

means for sequentially generating m binary signals (m: positive integer) representative of an image to be recorded, said binary signals being in a timed relation with said clock signal, the scanning operation in said other direction being effected m times for said image to be recorded;

means for sequentially selecting i unit video data (i: integer) among those stored in said storing means to form a series of controlled charge amount data for each scanning operation in said other direction on said recording surface, the values of said sequentially selected unit video data being stepwise monotonously changed;

means for creating a logical product of said clock signal, said selected unit video data and said binary signal; and

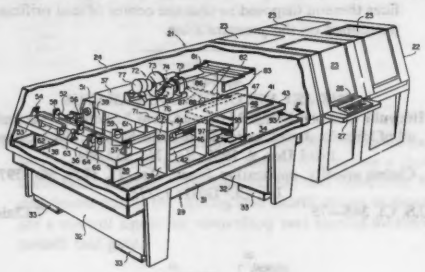
means for generating an image signal from the output of said logical product creating means for giving charges to said train of ink droplets.

4,354,196

LASER ENGRAVING SYSTEM WITH MASSIVE BASE TABLE AND SYNCHRONIZATION CONTROLS

Don B. Neumann, Laguna Beach; Lyle K. Norton, Santa Ana, and Eric V. Olson, Long Beach, all of Calif., assignors to Eocom Corporation, Irvin, Calif.

Division of Ser. No. 42,133, May 24, 1979. This application Mar. 19, 1981, Ser. No. 245,697
Int. Cl.[3] H04N *1/22*
U.S. Cl. 346—108 6 Claims



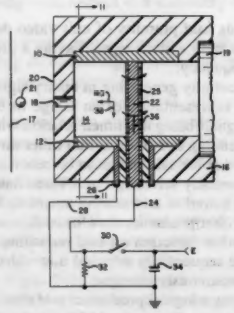
1. In a system for forming an image of printed circuit artwork on an output medium: a massive base table comprising a stone slab having a highly polished upper surface, a carriage assembly for holding the output medium, means mounting the carriage assembly on the surface of the base table for movement in a first direction along said surface, a laser mounted on the base table for generating a writing beam, means for modulating the writing beam in accordance with the artwork to be imaged on the output medium, an optical table comprising a second stone slab rigidly mounted on the base table, optical means mounted on the optical table for directing the writing beam along a predetermined path toward the output medium, a scanning table comprising a third stone slab rigidly mounted on the base table, and scanning means mounted on the scanning table in the path of the beam for deflecting said beam across the output medium in a direction perpendicular to the first direction.

4,354,197

INK JET PRINTER DRIVE MEANS

Peter H. Reitberger, Munich, Fed. Rep. of Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 3, 1980, Ser. No. 193,570
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—140 R 18 Claims



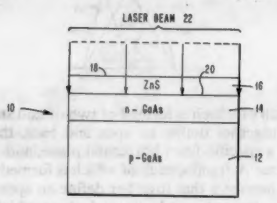
1. Apparatus for producing characters on record media in dot matrix form comprising a
body portion having an inlet, an
ink chamber within said body portion and containing fluid under pressure, a
pair of metallic electrodes adjacent said chamber and spaced to accommodate said fluid therebetween, an
outlet of said body portion forming an aperture of reduced diameter from that of said inlet,
electrical conducting means extending through said chamber and connected with one of said electrodes for receiving current and insulated from the other electrode and producing an azimuthal magnetic field in said fluid for generating a force in the direction of said aperture, and
means connected with said electrical conducting means and with the other electrode for switching operation of said conducting means whereby discharge of current between said electrodes in said magnetic field is transmitted to the ink fluid for producing pressure waves therein and causing ejection of ink from the aperture in droplet form.

4,354,198

ZINC-SULPHIDE CAPPING LAYER FOR GALLIUM-ARSENIDE DEVICE

Rodney T. Hodgson, Ossining; George D. Pettit, Mahopac; Thomas O. Sedgwick, Briarcliff, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1980, Ser. No. 154,700
Int. Cl.[3] H01L *29/161*
U.S. Cl. 357—16 2 Claims



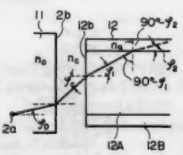
1. A semiconductor device body of a group III–V semiconductor having at least one surface with a first lattice structure, and a group II–VI semiconductor having a second lattice structure different from said first lattice structure in an annealed condition on said at least one surface functioning as a passivating layer for said body.

4,354,199

SEMICONDUCTOR LIGHT-EMITTING DEVICE

Osamu Hasegawa; Kenji Yano, both of Kawasaki, and Koichi Kaneda, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 29, 1980, Ser. No. 182,587
Int. Cl.[3] H01L *31/12, 33/00*
U.S. Cl. 357—19 21 Claims



1. A semiconductor light-emitting device comprising:
a semicondutor substrate,
a $Ga_{1-x}Al_xAs$ crystal layer formed by epitaxial growth on said semiconductor substrate, wherein the x value in said

crystal layer is gradually decreased as said epitaxial growth progresses,

a light-emitting portion formed where said x value is minimum in said crystal layer, and

a light-launching surface at a side surface of said crystal layer, whereby a light ray emitted from said light-emitting portion is bent in accordance with the distribution of said x value to reach said light-launching surface, said semiconductor substrate comprising a groove formed on said semiconductor substrate.

4,354,200

AMPLITUDE MODULATOR CIRCUIT FOR MODULATING A VIDEO SIGNAL ON A CARRIER SIGNAL

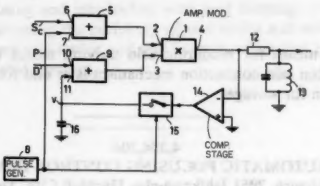
Henricus W. G. Haenen, and Robertus S. N. M. Huesken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,941

Claims priority, application Netherlands, Dec. 20, 1979, 7907177

Int. Cl.³ H04N *5/40*

U.S. Cl. 358—23 **17 Claims**



1. An amplitude modulator circuit for modulating a video signal having periodically occurring reference signal portions on a carrier signal, comprising a modulator having a carrier input terminal for receiving the carrier signal, a modulation input terminal for receiving the video signal and an output terminal for supplying the amplitude modulated signal obtained, said amplitude modulator circuit further comprising a control loop which is coupled to the output terminal of the modulator and includes a sampling circuit which is active during reference signal intervals, said control loop generating a direct current compensation signal to be added to the video signal, characterized in that the signal at the modulation input terminal of the modulator has a value for which the signal at the output terminal of the modulator is substantially independent of the signal at the carrier input terminal of the modulator during the period of time in which the sampling circuit is active, and that the circuit also comprises an adder stage connected to the output terminal, and a second control loop which includes a second sampling circuit which is active during reference signal intervals, said second control loop generating a second direct current compensation signal to be added to the signal at the output terminal of the modulator, the first control loop being connected to the output terminal of the adder stage.

4,354,201

TELEVISION SYSTEM WITH ACCESS CONTROL

Claude Sechet, Rennes, France; Gerard Babonneau, 14, rue Theodore Botrel, 35830 Betton, France, and Louis C. Guillou, Saint Erblon, France, assignors to Etablissement Public de Diffusion Dit: Telediffusion de France, Montrouge and Gerard Babonneau, Betton, both of, France

Filed Jun. 11, 1980, Ser. No. 158,499

Claims priority, application France, Jun. 15, 1979, 79 15400

Int. Cl.³ H04N *7/16*; H04K *1/04*

U.S. Cl. 358—122 **5 Claims**

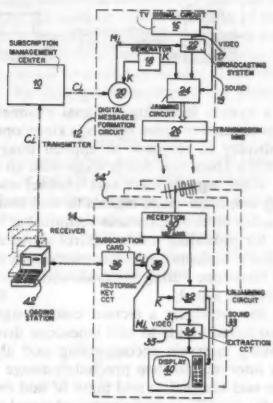
1. A television system with access control constituted by a transmitter and receivers, the transmitter comprising a circuit for the formation of a video signal organized in lines and fields and a sound signal, a transmission means for said signals and a jamming circuit using a service key K, said jamming circuit receiving the video and/sound signal and supplying jammed video and/sound signals which are then transmitted to the transmission means, each receiver comprising a reception means for the transmitted signals, means for the display of a picture and for the restoration of sound and an unjamming circuit connected to the reception means and working with said service key K, said unjamming circuit supplying unjammed video and optionally sound signals which are then transmitted to the means for the display of the picture and the restoration of the sound, wherein it also comprises:

(A) a subscription management center comprising means for generating a plurality of digital signals constituting subscription keys C_i changing in random manner at relatively long intervals of approximately one month;

(B) in the transmitter:

(a) a generator of a digital signal constituting the the service key K which changes in random manner at relatively short intervals of approximately a few minutes,

(b) a circuit for the formation of digital messages M_i obtained from the subscription keys C_i and the service key K by an algorithm parametered by the subscription



keys, i.e. $Mi=F_{Ci}(K)$, said circuit supplying the same number of messages as there are subscription keys and these messages change with the service key,

(c) a data broadcasting system able to insert messages Mi in the field blanking intervals of the video signal, jamming not affecting the messages contained in the field blanking interval;

(C) in each receiver:

(a) a subscription card on which is entered a signal corresponding to at least one of the subscription keys C_i,

(b) a circuit for the extraction of the data contained in the signal received and which restores the messages Mi,

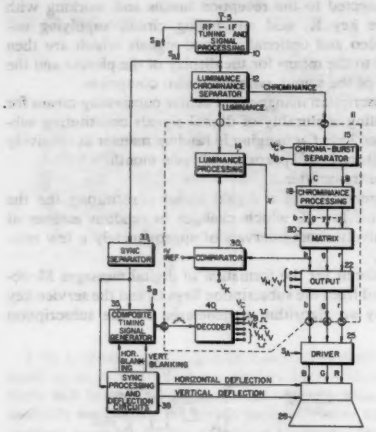
(c) a circuit for the restoration of the service key receiving on the one hand messages Mi supplied by the preceding circuit and on the other hand the subscription key Ci supplied by the subscription card, said circuit performing an algorithm $K=G_{Ci}(Mi)$ which makes it possible to restore the signal corresponding to the service key K used in the transmitter;

(d) at least one subscription card loading station which is connected to the subscription management center from which it receives the signals corresponding to the different subscription keys Ci generated by the center, each station being able to temporarily receive the subscription cards and write therein one of the subscription keys Ci.

4,354,202
TELEVISION RECEIVER ON-SCREEN ALPHANUMERIC DISPLAY

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,787
Int. Cl.³ H04N 5/22
U.S. Cl. 358—183 11 Claims



1. In a system including a signal channel for processing image representative video signals; a kinescope for providing a picture display in response to applied image representative signals; and a kinescope driver stage with an input for receiving said video signals from said channel and an output for supplying amplified video signals to said kinescope; alphanumeric display control apparatus comprising:

means for providing a first control signal representative of auxiliary alphanumeric information to be displayed by said kinescope during intervals within picture intervals of said video signal;

means for providing a second control signal for blanking video signal inputs to said kinescope driver stage during blanking intervals encompassing said alphanumeric display intervals, to then preclude passage of video signals from said channel to said input of said driver stage; and

means for coupling said first control signal to said kinescope driver stage independent of said video channel, with a sense and magnitude for unblanking said output of said driver stage so that said kinescope then displays said alphanumeric information in accordance with said first control signal.

4,354,203
LENS CONTROL MECHANISM FOR TELEVISION CAMERA

Naoki Koyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1980, Ser. No. 150,064
Claims priority, application Japan, May 21, 1979, 54-61518
Int. Cl.³ H04N 5/26; G03B 3/00
U.S. Cl. 358—227 4 Claims

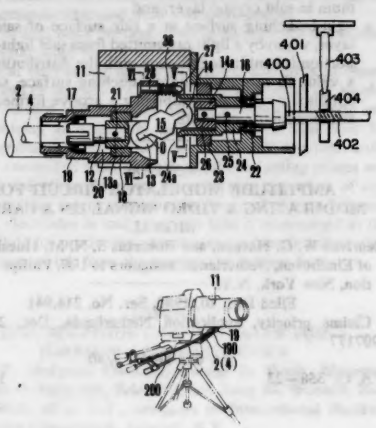
1. A television camera comprising

a lens having a movable lens member;

means for moving said movable lens member;

a rotatable flexible shaft;

a rotatable connection mechanism having one end connected with said flexible shaft and another end connected to said moving means, said rotatable connection mechanism transferring rotative motion of said rotatable flexible shaft to said means for moving said movable lens member so as to effect movement thereof, said connection mechanism having a rotation position for storage and a rotation position for operation; and

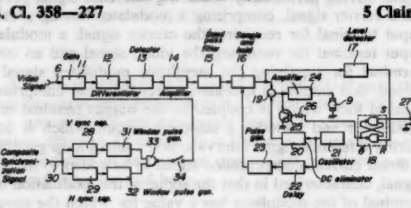


stop means for rendering said moving means inoperative when said connection mechanism is at said rotation position for storage.

4,354,204
AUTOMATIC FOCUSING CONTROL DEVICE

Kenji Kimura, 2951 Ishikawa-cho, Hachioji City, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,085
Claims priority, application Japan, Feb. 18, 1980, 55-19456
Int. Cl.³ H04N 5/26
U.S. Cl. 358—227 5 Claims



1. An automatic focusing control system comprising an optical system, means for modulating a focal length by a modulating signal, means for sensing an output signal corresponding to the focal length from an image signal obtained from the modulating means, means for sensing a focusing error signal from the output signal and the modulating signal, and means for controlling or adjusting the focal length by superimposing the error signal upon the modulating signal.

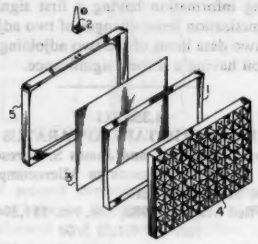
4,354,205
ATTACHABLE, IMAGE-MODIFYING SCREEN FOR TELEVISION IMAGES

George F. Lowe, 3435 Army St.; Peter A. Gutkin, 170 Capp St., both of San Francisco, Calif. 94110, and Charles C. Wehrenberg, 72 Kissling, San Francisco, Calif. 94103

Filed Oct. 6, 1980, Ser. No. 194,235
Int. Cl.³ H04N 5/72
U.S. Cl. 358—250 6 Claims

1. A real-time video image modifying device said modification being the hundredfold reduction of video resolution relative to the source television and said device comprising: a

molded plastic housing said housing having an open forward end and an open back end; a flexible hanger strap attached to the top of said housing and arranged to allow said device to be hung in front of the screen of a television; a flat translucent but not transparent screen mounted in said housing and arranged to diffuse light through said forward end opening; a deep



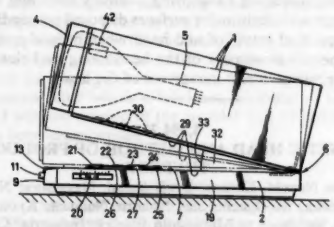
lattice formed from slats having highly reflective surfaces, said slats being spaced apart a distance greater then several pixels, said lattice being mounted behind said translucent screen inside of said housing and interlocked with said housing; a flexible collar surrounding the periphery of said lattice and said collar held between said lattice and said housing when said lattice is glued into said housing.

4,354,206

TELEVISION RECEIVER

Yoshinobu Nameki, Kawagoe, and Shin Miyashita, Higashimurayama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,390
Claims priority, application Japan, Feb. 18, 1980, 55-19250[U]
Int. Cl.³ H04N *5/64, 5/655*
U.S. Cl. 358—254 **7 Claims**



1. A television receiver comprising:

a main body including a television screen disposed on a front surface thereof;

a base for mounting said main body thereon;

supporting means for rotatably supporting said main body relative to said base;

main control means for mainly controlling said receiver, at least one of said main control means being disposed on a front end surface of said base; and

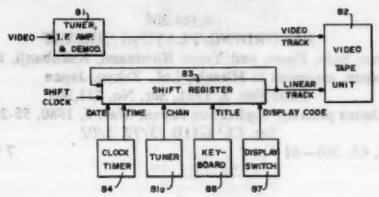
sub-control means disposed on a top surface of said base for supplementally controlling said receiver, said sub-control means being concealed by said main body when said main body is horizontally supported on said base, while said sub-control means being exposed to be operable when said main body is rotated upward.

4,354,207

SYSTEM FOR IDENTIFYING AND LOCATING RECORDED ANALOG INFORMATION

Gilman D. Chesley, 22431 Starling Dr., Los Altos, Calif. 94022

Filed Mar. 12, 1979, Ser. No. 19,471
Int. Cl.³ H04N *5/78*; G11B *15/18*; H04N *5/76*
U.S. Cl. 360—9.1 **10 Claims**



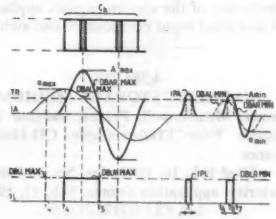
1. In a system for monitoring analog information recorded on a serial access read/write medium for display on the screen of a video display device: means for recording identifying information on the medium in position to be transcribed concurrently with the analog information, means for transcribing the identifying information concurrently with the analog information to provide an identifying signal for the information as said information is transcribed, means for recording a display command signal on the medium where a display of the identifying information is desired, and means responsive to the display command signal for presenting the identifying signal to the video display device to provide a display of the identifying information with the analog information on the video screen.

4,354,208

MAGNETIC RECORDING MEDIUM AND DIGITAL STORAGE DEVICE INCLUDING SAME

M. Christian Maury, Velizy, France, assignor to Compagnie International Pour l'Informatique, Paris, France

Filed Sep. 17, 1979, Ser. No. 76,332
Claims priority, application France, Oct. 19, 1978, 78 29847
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 **10 Claims**



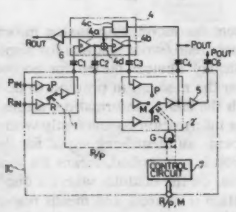
1. A digital storage device comprising a magnetic storage medium including a plurality of elongated, substantially parallel magnetic tracks, adjacent ones of said tracks having abutting elongated edges, each of said tracks including a plurality of elongated cells of substantially the same length, the cells of adjacent tracks being longitudinally aligned, each of said cells representing a binary bit, the binary bits having first and second values respectively having N_1 and N_2 magnetic polarity transitions, where N_1 differs from N_2 and includes the number zero, the transitions occurring in each cell for binary bits having the same value occurring at the same relative place within the cell, and a magnetic head for reading the magnetic transitions positioned to straddle a pair of adjacent tracks simultaneously, the tracks being adapted to be moved longitudinally relative to the head, multiple successive cells along the lengths of the first and second abutting tracks providing only information to enable the head to be positioned to centrally straddle

the abutting tracks, aligned head positioning cells of the first and second tracks having differing numbers of said transitions to represent the first and second binary values, the even and odd numbered head positioning cells of the first track respectively representing the first and second binary values, the odd and even numbered head positioning cells of the second track respectively representing the first and second binary values.

4,354,209
RECORDING/PLAYING CIRCUIT

Tetsuo Sato, Fussa, and Yasuo Kominami, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,369
Claims priority, application Japan, Mar. 5, 1980, 55-26547
Int. Cl.³ G11B *15/12, 5/02*
U.S. Cl. 360—61 **7 Claims**

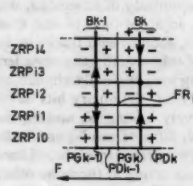


1. A recording/playing circuit comprising:
a noise reduction circuit which includes a pre-amplifier, a combining network, an inverter circuit and a side chain;
a switching circuit which includes first, second and third input positions and an output terminal, said first input position being coupled to an output of said pre-amplifier of said noise reduction circuit, said second input position being coupled to an output of said inverter circuit of said noise reduction circuit, said output terminal being coupled to said side chain of said noise reduction circuit, and said third input position being connected to a muting circuit; and
a control circuit for controlling said switching circuit to transmit to said output terminal of said switching circuit selectively one of the electric signals applied to the first, second and third input positions of said switching circuit.

4,354,210
MAGNETIC STORAGE MEDIUM

Jacques Droux, Montfermeil, France, assignor to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Feb. 16, 1979, Ser. No. 13,796
Claims priority, application France, Feb. 17, 1978, 78 04498
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—77 **13 Claims**

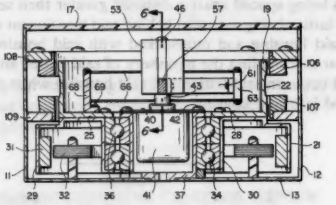


1. A magnetic recording medium in which data are written in binary code and carried by a plurality of tracks, the medium containing at least one sub-set of data items each of which is defined by a magnetization sense change and disposed along adjoining tracks, the items in the sub-set being read by at least one magnetic transducer which straddles two adjoining tracks, the improved medium comprising a magnetization sense change representing each data item in the sub-set being positioned to always occupy the same position in any track, two identically located magnetization sense changes of two adjoining tracks representing two data items of the two adjoining tracks defining information having a first significance, two different magnetization sense changes of two adjoining tracks representing two data items of the two adjoining tracks defining information having a second significance.

4,354,211
MAGNETIC TAPE APPARATUS

Paul A. Gilovich, Saratoga, and James S. Toreson, Mountain View, both of Calif., assignors to Microcomputer Systems Corporation, Sunnyvale, Calif.

Filed May 19, 1980, Ser. No. 151,394
Int. Cl.³ G11B *5/08*
U.S. Cl. 360—84 **8 Claims**



1. A magnetic tape apparatus comprising a drum, means for supporting and rotating said drum, at least one transducer mounted to rotate with said drum and extending past the surface of said drum through a slot formed in said drum, means comprising a take-up means for presenting a selected length of tape to said drum so that the transducer scans along longitudinal tracks as it rotates past said tape, means for moving said transducer longitudinally along said slot so that it moves along a plurality of laterally spaced tracks formed along said tape, said means including a leafspring assembly including a pair of leafsprings with their major surfaces disposed perpendicular to the direction of travel of said head whereby said springs can flex to permit movement of the head along said slot but are rigid to prevent lateral movement of the head.

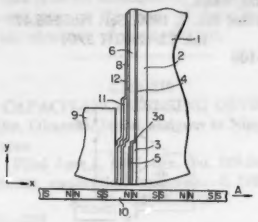
4,354,212
MAGNETIC HEAD AND METHOD OF PRODUCTION THEREOF

Norimoto Nouchi, Katano; Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 8, 1980, Ser. No. 166,808
Claims priority, application Japan, Jul. 11, 1979, 54-88496
Int. Cl.³ G11B *5/12, 5/30*
U.S. Cl. 360—113 **6 Claims**

1. A magnetic head, comprising:
a magnetoresistive element, said magnetoresistive element being composed of a magnetoresistive film having first and second opposite surfaces;
first and second hard permanent magnet films each having first and second surfaces located adjacent the first and second surfaces respectively of said magnetoresistive element, said permanent magnet films having magnetic charges for together generating a DC bias magnetic field in said magnetoresistive film; and
at least first and second intermediate non-magnetic films,

said first intermediate non-magnetic film being interposed between the first surface of said magnetoresistive element and the first surface of said first permanent magnet film



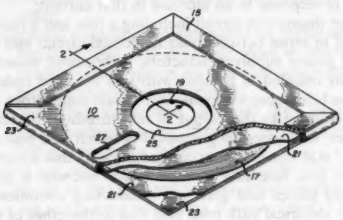
and said second intermediate non-magnetic film being interposed between the second surface of said magnetoresistive element and the second surface of said second permanent magnet film.

4,354,213

SELF-LUBRICATING LINER

Lawrence G. Martinelli, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Jun. 2, 1980, Ser. No. 155,434
Int. Cl.³ G11B *5/016, 23/02, 5/72*
U.S. Cl. 360—133 **6 Claims**



1. An improved floppy disk assembly of the type having a circular disk of magnetic recording material enclosed within an envelope formed from material fabricated by bonding together a layer of porous, fibrous, low-friction, anti-static material and a layer of solid material, wherein the improvement comprises employing porous, fibrous, low-friction, anti-static liner material into which a lubricant, identical to that compounded into the coating of the circular disk of flexible material, has been compounded.

4,354,214

MOTOR PROTECTION CIRCUIT

John F. Walton, 6853 Strata St., McLean, Va. 22101

Filed Sep. 11, 1979, Ser. No. 74,516
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—23 **16 Claims**

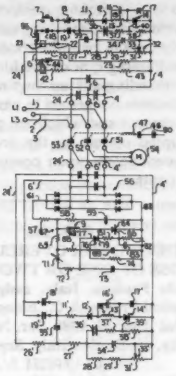
1. Apparatus for protecting an electrical motor connectable to an electric power source through a switchable circuit breaker means comprising:

a first protection circuit having first protection means for sensing a first plurality of elecrical parameters at the power source detrimental to the motor and first operation means for causing the circuit breaker to switch to an open condition disconnecting the motor from the power source,

said first operation means being actuatable upon the sensing by the first detection circuit of a malfunction of any one of said first plurality of electrical parameters, and

a second protection circuit comprising second detection means for sensing a second plurality of parameters on the side of the circuit breaker connected to the motor detrimental to the motor,

second operation means for causing the circuit breaker to



switch to an open condition and disconnect the motor from the power source,

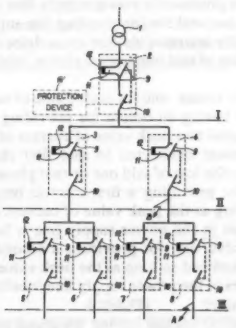
said second operation means being actuatable upon the sensing by said second detection circuit of any one of said detrimental second plurality of electrical parameters.

4,354,215

SELECTIVE SAFETY DEVICE FOR THE PROTECTION OF A POWER DISTRIBUTION SYSTEM

Derk van der Scheer, Goor, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Filed Jun. 11, 1980, Ser. No. 158,618
Claims priority, application Netherlands, Jun. 11, 1979, 7904563
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—63 **6 Claims**



1. A selective safety device for the protection of successive power levels in a power distribution system, comprising:

a current limiting switch in each of said power levels and including a current limiting quick-switching contact, said current limiting switch being positioned at the power supply side in each one of said different power levels and that current limiting switch immediately in front of a fault being switched off upon occurrence of a fault;

a resistor connected across each of said quick-switching contacts and being serially connected in the interrupted circuit upon the opening action of said quick-switching contact;

a slow-switching contact serially connected with each of said quick-switching contacts and being coupled with said quick-switching contact to be opened after opening of the quick-switching contact with a presettable delay time, said delay time being dependent upon the power level in which said slow-switching contact is connected;

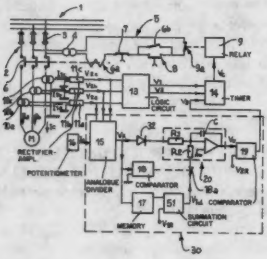
delay time means for establishing said delay time and being immediately reset in an initial condition upon re-closing of the current limiting quick-switching contact;

said resistor including at least two serially connected resistance conductors connected in parallel across said quick-switching contact and which are gradually introduced in the interrupted circuit by the arc formed between the resistance conductors upon opening of a quick-opening switching contact.

4,354,216
DETECTOR DEVICE FOR OVERCURRENTS AND THE LOSS OF ONE OR TWO PHASES

Ideo Volta, Zola Predosa, Italy, assignor to La Puntimatic S.n.C. di Musiani Franco & C., Bologna, Italy

Filed Aug. 29, 1980, Ser. No. 182,589
Claims priority, application Italy, Sep. 3, 1979, 3487 A/79
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **4 Claims**



1. A detector device for detecting overcurrents and the loss of one or two phases of a power supply line of an electrically operated device, and for interrupting the supply of power to said electrically operated device upon detecting the overcurrents or the loss of said one or two phases, said device comprising:

first electric means, one for each phase of said power supply line, and having an output for providing an output signal proportional to a peak value of current of said each phase;

detector means connected to said first electric means for detecting the loss of said one or two phases, and having an output for providing a first electric output signal when and so long as the peak value of current of at least one of the phases in the power supply line is below a predetermined valve, and for providing a second electric output signal when and so long as the peak value of current in all the phases in the power supply line is below said predetermined value;

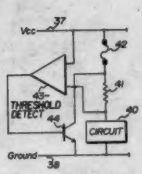
second electric means having an input connected to the output of the said first electric means, and having an output for providing a third electric output signal when and so long as the peak value of current in any one of the phases in the power supply line attains a predetermined level; and

time delay means connected to the output of the said detector means and to the output of the second electric means for issuing a deenergization signal to deenergize the elctrically operated device in response to provision of said first and third electric output signals, and for inhibiting issuance of said deenergization signal in response to, and a predetermined delay time after, provision of said second electric output signal.

4,354,217
AUTOMATIC POWER DISCONNECT SYSTEM FOR WAFER SCALE INTEGRATED CIRCUITS

Michael J. Mahon, Austin, Tex., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 7, 1980, Ser. No. 166,477
Int. Cl.³ H02H *5/04*
U.S. Cl. 361—104 **7 Claims**



1. An integrated circuit structure comprising:

a crystalline substrate having a plurality of functional circuits formed on the surface thereof; and

a pair of power supply conductors on said surface and provided for connection to each of said functional circuits;

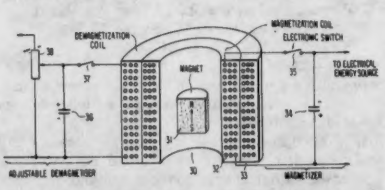
each of said function circuits including a power disconnect circuit coupled in series with said functional circuit between said respective power supply conductors, said power disconnect circuit including a power disconnect means to disrupt the current supplied to said function circuit in response to an increase in that current;

said power disconnect circuit including a fuse and a resistor coupled in series between said functional circuit and one of said power supply conductors, a threshold detection amplifier coupled in parallel with said fuse and resistor, said fuse being coupled to said one of said conductors, and a gate coupled to the output of said threshold detection amplifier, said gate being coupled between said fuse and other of said power supply conductors such that a current through said fuse and resistor which exceeds a given threshold places said gate in a conducting condition to form an electrical path from said fuse to the other of said power supply conductors.

4,354,218
PROCESS AND APPARATUS FOR MULTI-POLAR MAGNETIZATION OF ANNULAR PERMANENT MAGNETS

Erich A. Steingroever, Flensburger Strasse 33, 5300 Bonn, and Dietrich Steingroever, An der Schanz 2, 5000 Köln 60, both of Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,615
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907898
Int. Cl.³ H01F *7/00*
U.S. Cl. 361—147 **19 Claims**



1. Apparatus for the magnetization to saturation and adjustable demagnetization to a desired value of permanent magnets, comprising separate magnetization and demagnetization coils, each of said coils being electrically isolated from each other and being wound upon the same coil form, and circuit means comprising impulse electrical charging means connected with

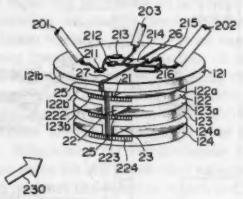
one of said coils for magnetizing a permanent magnet to saturation with a predetermined polarity, said circuit means also including impulse electrical charging means connected with the other of said coils for subsequently partially demagnetizing said permanent magnet, the force of demagnetization being opposite to the direction of magnetization.

4,354,219

CAPACITANCE SENSING DEVICE

Sigeyuki Akita, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 1, 1981, Ser. No. 249,863
Claims priority, application Japan, Apr. 4, 1980, 55/46144[U]
Int. Cl.³ H01G 7/00
U.S. Cl. 361—284 3 Claims



1. A capacitance sensing device comprising:

a plurality of electrical insulating bases arranged to face each other;

electrical insulating support means for partly supporting and firmly holding said insulating bases in layers arranged at predetermined spaces so that said insulating bases have facing and non facing surfaces;

at least first and second electrode films deposited on the facing surfaces of said electrical insulating bases to establish a capacitance therebetween;

first and second conductors electrically connected respectively to said first and second electrode films and extending to the same non-facing surface of one of said electrical insulating bases;

electric circuit elements electrically connected to said first and second conductors and formed on said nonfacing surface of one of said electrical insulating bases to which surface said conductors are extending, thereby generating an electric signal corresponding to the capacitance between said first and second electrode films; and

refrigerant inlet means for shielding said nonfacing surface having said electric circuit elements formed thereon and introducing a medium to be detected between said first and second electrode films.

4,354,220

GAS INSULATED POWER SWITCH-GEAR APPARATUS

Kazuaki Oishi, Hitachi, and Seizo Nakano, Mito, both of Japan, assignors to Hatachi, Ltd., Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 168,779
Claims priority, application Japan, Jul. 20, 1979, 54-91525
Int. Cl.³ H02B 1/20
U.S. Cl. 361—341 7 Claims

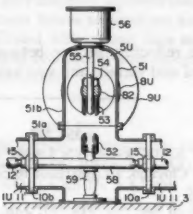
1. A gas insulated power switch-gear apparatus comprising:

three main bus bars having axes extending in a predetermined first direction in a first horizontal plane, each of said main bus bars including a sheath filled with an insulating gas and a main conductor arranged within said sheath;

three feeding bus bars having axes extending in a second direction perpendicular to said first direction in a second horizontal plane of a level different from said first horizontal plane, each of said feeding bus bars including a sheath filled with an insulating gas and a feeder conductor arranged within said sheath;

a plurality of gas insulated circuit breakers having axes extending in said second direction and electrically connected with said feeding bus bars respectively; and

a plurality of gas insulated disconnecting switches each arranged between a corresponding one of said feeding bus bars and a corresponding one of said main bus bars, each of said gas insulated disconnecting switches being inserted into an interrupted point of said main bus bar and having an axis aligned with the axis of said main bus bar and a diameter substantially the same as that of the sheath of the main bus bar, each of said gas insulated disconnecting switches further including a sheath having a first sheath portion with the ends thereof connected mechanically with interrupted halves of the sheath of the main bus bar and a second sheath portion communicating with said first sheath portion and having an axis extending in a third direction perpendicular to said first and second horizontal



planes, at least one insulating spacer inserted between said first sheath portion and the main bus bar sheath, at least one of the ends of said first sheath portion for defining a gas section, a fixed contactor having an axis coincident with the axis of said second sheath portion and electrically connected with a main conductor, said fixed contactor being arranged within said first sheath portion, a collector having an axis coincident with the axis of said second sheath portion and electrically connected with said feeder conductor, said collector being secured within said second sheath portion, and a movable contactor having an axis coincident with the axis of said collector and normally electrically connected with said collector, said movable contactor being movable in said third direction for effecting electrical connection or disconnection with said fixed contactor.

4,354,221

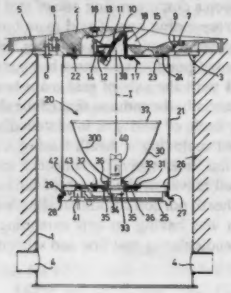
GUIDANCE LIGHT FOR AIRPORT RUNWAYS

Marcel E. Hoffmann, Lasne, Belgium, assignor to Societe Anonyme des Etablissements Adrien de Backer, Brussels, Belgium

Filed Nov. 7, 1980, Ser. No. 204,873
Int. Cl.³ F21V 7/00
U.S. Cl. 362—300 6 Claims

1. A guidance light for airport runway comprising a casing in which are mounted a light source and an optical system to direct light along a path which includes a given axis, said optical system including a reflector having an internal concave reflecting surface facing said light source and being formed as a surface of revolution about said axis, said reflecting surface being configured so as to reflect light from said source onto said axis along a continuous segment thereof such that each

point reflects light onto said segment at a distance from its end nearest to the light source which is proportional to the arcuate



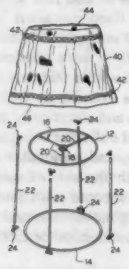
length of the reflecting surface between said point and the intersection of said surface and said axis.

4,354,222

KNOCK-DOWN LAMP SHADE

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Continuation of Ser. No. 919,757, Jun. 28, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,083
Int. Cl.³ F21V *1/06*
U.S. Cl. 362—352 **3 Claims**



1. A knock-down lamp shade comprising

(a) a knock-down frame composed of upper and lower integral and completely closed ring members with a plurality of peripherally spaced rib members extending therebetween,

(b) a flexible skirt-like cover adapted to be spread from a flattened condition for sliding over the exterior of said frame in surrounding and substantially tightly form-fitting relation thereto,

(c) said upper ring member including a spider member having a central member and a plurality of spaced radially positioned arms, each affixed at one end to said central member and at the other end to the periphery of said upper ring member, and

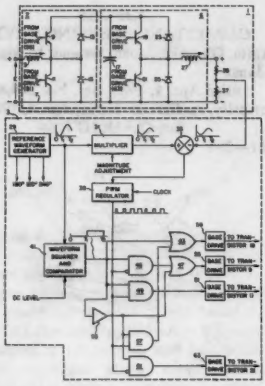
(d) a plurality of discrete clamping members for positioning at each end of said rib members for interconnecting the latter with said ring members, each clamping member having vertical medial clamping means for releasably engaging said last-mentioned end, and a pair of branched horizontally disposed clamping means extending transversely from said first-mentioned clamping means for releasably engaging the portions of said ring members adjacent to and on the opposite sides of said rib members.

4,354,223

STEP-UP/STEP DOWN CHOPPER

Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,664
Int. Cl.³ H02M *7/00*
U.S. Cl. 363—124 **7 Claims**



1. A chopper circuit comprising:

a step-up dc-dc chopper portion capable of bidirectional power flow and providing a variable dc output voltage;

a step-down dc-dc chopper portion capable of bidirectional power flow and providing a variable dc output voltage, said step-down chopper portion coupled in series with said step-up chopper portion, the series combination of choppers receiving input power from an external dc power source;

means for generating a signal representative of the desired output voltage waveform; and

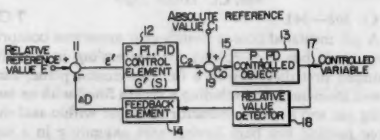
means for controlling the switching of said step-up chopper portion to follow said desired output voltage waveform when the magnitude of said desired waveform is greater than said external dc power source voltage and for controlling the switching of said step-down chopper portion to follow said desired output waveform when the magnitude of the desired output waveform is less than the external dc power source voltage.

4,354,224

MANIPULATION-VARIABLE SEPARATED TYPE SYSTEM CONTROL METHOD AND APPARATUS

Takao Sato, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,798
Claims priority, application Japan, Apr. 25, 1979, 54-50351
Int. Cl.³ G05B *11/18, 11/42*
U.S. Cl. 364—183 **9 Claims**



6. A manipulation-variable separated type modified feedback control system comprising:

(a) an object being controlled or a controlled object;

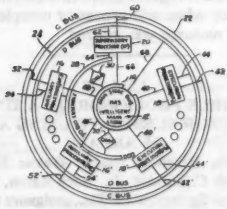
(b) control element means having a transfer function for a

proportional operation, an integral operation and a derivative operation either singly or in combination;
(c) feedback means for feeding back a physical quantity detected from the controlled object;
(d) relative value detecting means provided at the controlled object for detecting a relative change deviated from a reference value for the controlled variable of the controlled object;
(e) first adder means with one input for receiving a relative value output from the detecting means through the feedback means and another input for receiving a relative reference value for the controlled variable, for generating a deviation between the two inputs;
(f) first setting means for setting the relative reference value;
(g) second adder means with one input for receiving an output from said control element means connected to receive the deviation output of the first adder means and another input for receiving an absolute reference value, for generating an output representative of a totalized manipulation variable obtained from superposition of the two inputs irrespective of detection of disturbance; and
(h) second setting means (C_1) for setting the absolute reference value for the manipulation variable,
whereby the absolute reference value (C_1) for the manipulation variable and the change (C_2) of the manipulation variable determined by the deviation from the relative reference value for the controlled variable are established to satisfy at least the relation which is $C_1 >> C_2$ and the total manipulation variable is the sum of divisions C_1 and C_2.

4,354,225
INTELLIGENT MAIN STORE FOR DATA PROCESSING SYSTEMS

Gideon Frieder, Williamsville; David T. Hughes, Amherst; Mark H. Kline; John T. Liebel, Jr., both of Williamsville; David P. Meier, Orchard Park, and Edward A. Wolff, Tonawanda, all of N.Y., assignors to Nanodata Computer Corporation, Buffalo, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,648
Int. Cl.[3] G06F *13/00, 15/16*
U.S. Cl. 364—200 21 Claims

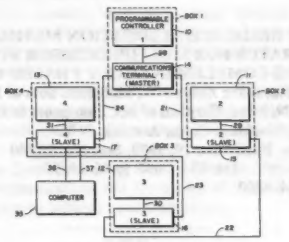


1. In combination with a plurality of heterogeneous data processors having different memory address and data structures, said processors being operatively connected to main store bus means common to all of said processors, an active intelligent main store comprising:
(a) memory means for storing a plurality of data words and error correcting bits associated with each word;
(b) control means operatively connected to said memory means, said control means including means for providing timing and control information to said memory means for reading and writing said memory means, means for providing physical addresses and data to said memory means, and means for providing error detection and correction responsive to the physical data and addresses presently available in said address and data providing means;
(c) a multiplicity of function means each being separate from said processors and each being operatively connected to said control means and operatively connected to said main store bus means, each of said function means operating substantially at main store speed, said function means including means for functionally mapping arbitrary portions of the signals on said main store bus into physical data and address information required by said control means, said functional mapping including data mapping and memory management functions such as virtual to physical address translation and memory protection, said memory protection being performed as a function of said address information required by said control means, said function means further including means for reserving portions of said memory means in response to said main store bus signals, said main store bus signals being interpreted by said reserving means to provide information to reservation algorithms associated with said function means such as base and field length reservation; and
(d) each of said function means implementing diverse virtual to physical address translation methods, memory protection methods and data mapping methods thereby allowing each of said function means to interpret said main store bus signals as different address and data structures, said function means being selected by said processors through said main store bus means.

4,354,226
COMMUNICATION TERMINAL FOR INTERCONNECTING PROGRAMMABLE CONTROLLERS IN A LOOP

Charles E. Flickinger, Dousman, and Richard C. Born, Wauwatosa, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 14, 1978, Ser. No. 960,598
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 15 Claims



1. A terminal for providing real time intercommunication of digital data between an associated programmable controller and N other programmable controllers, each of which is associated with a similar terminal, said terminals interconnected in at least one closed loop by transmission of N+1 frames of serial digital data which continuously circulate around said loop, each of said frames being identified with one and only one of said other programmable controllers, each of said frames being updated with information from the N other terminals in the loop as it makes one complete cycle of the loop and each of said frames updating the programmable controller with which it is identified when received by the terminal associated therewith, said terminal comprising, in combination:
receiving means connected to said loop for receiving therefrom input frames of digital data containing one or more data bytes of information relating to programmable controllers in said loop;
transmitting means connected to said loop for transmitting output frames of digital data thereto;
first buffer memory means for storing a frame of data;
first control means connected to said receiving means and first buffer memory means for transferring data from said receiving means to said first buffer memory means;

second buffer memory means connected to said associated programmable controller for delivering to said associated programmable controller bytes of stored data received from the frame of serial digital data associated with the terminal and which were originated by other programmable controllers thereto, the delivery of said stored data being under control of said associated programmable controller;

third buffer memory means connected to said associated programmable controller for receiving bytes of updated information therefrom for transmission to said other programmable controllers in frames associated with said other programmable controllers;

second control means connected to said first and second buffer memory means for transferring bytes of data for said associated programmable controller from said first buffer memory means to said second buffer memory means when the received input frame of digital data is identified with said associated programmable controller;

third control means connected to said first and third buffer memory means for transferring bytes of data for said other programmable controllers from said third buffer memory means to said first buffer memory means when the received input frame of digital data is not identified with said associated programmable controller; and

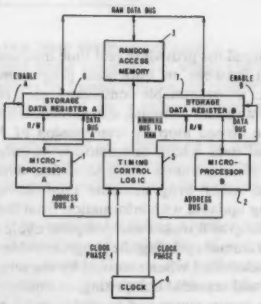
fourth control means connected to said first buffer memory means and said transmitting means for transferring data from said first buffer memory means to said transmitting means for transmission of N output frames not identified with said associated programmable controller, said output frames corresponding to said input frames updated with information for N other programmable controllers, said fourth control means transmitting an output frame identified with said associated programmable controller to be updated by said other terminals.

4,354,227

FIXED RESOURCE ALLOCATION METHOD AND APPARATUS FOR MULTIPROCESSOR SYSTEMS HAVING COMPLEMENTARILY PHASED CYCLES

Daniel O. Hays, Jr.; Andrew W. Maholick, both of Raleigh, and William N. Mize, Cary, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,840
Int. Cl.[3] G06F *9/46, 13/00*
U.S. Cl. 364—200 **2 Claims**



1. In a complementarily phased clock cycle driven multiprocessor system having N independent processors divided into Q groups of two processors per group where N is even and into Q+1 groups including a single group of one processor if N is odd, and said system having a common clocking means for sequentially supplying to said groups of processors a stream of cyclic clock signals, each cycle of said cyclic clock having two phases and each group of processors being provided with one clock cycle in sequence before any said group receives another said clock cycle, and wherein each said processor in a group executes or accesses data in interleaved fashion with the other said processor in said group with one said processor executing on one said phase of said clock cycle while the other said processor accesses data on said phase, and in which said one processor accesses data on said other phase of said clock cycle while said other processor executes data;

and said system further having certain fixed resources to be shared by said processors, said processors contending for the exclusive use thereof; and

said system having control means for granting exclusive use of a fixed resource to one or another of said contending processors, said control means including at least a control register for storing data and means for storing in said register indication of the current state of availability of each said fixed resource, an improved method of controlling the allocation of said fixed resources to an individual processor's use, comprising individual steps executed serially by each said processor within said stream of cyclic clock signals of:

accessing the current contents of said control register for said shared resource;

examining the contents of said control register to determine the availability of said resource;

setting the contents of said control register to a unique digital code assigned to the particular said processor contending for usage of said resource upon said processor's next clock cycle if said examining step indicates availability exists for said resource;

waiting for one cycle of said system clock to pass without operations involved in gaining access to control by said processor taking place during which time the other said processor in said group in which said processor is classed may access, examine or set the contents of said control register; and

comparing after said waiting step said unique digital code assigned to said particular processor contending for usage of said resource with the existing content of said control register;

acquiring control when using said fixed resource only if a true comparison exists between said processor's unique code and the contents resident in said control register; and

setting said control register to indicate current availability of said resource when said processor completes the task for which said resource was utilized.

4,354,228

FLEXIBLE PROCESSOR ON A SINGLE SEMICONDUCTOR SUBSTRATE USING A PLURALITY OF ARRAYS

Victor S. Moore, Deerfield Beach; Wayne R. Kraft, Coral Springs; Joseph C. Rhodes, Jr., Boca Raton, and William L. Stahl, Jr., Coral Springs, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,711
Int. Cl.[3] G06F *7/00*
U.S. Cl. 364—200 **34 Claims**

1. A processor fabricated on a single semiconductor substrate comprising:

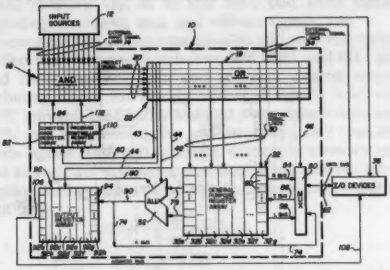
AND array means for receiving program instructions from input sources external of the processor and for generating product signals;

OR array means interconnected to said AND array means for receiving said product signals and for generating a plurality of control signals;

register means for receiving ones of said plurality of control signals and for transferring data between the processor and data sources external of the processor;

arithmetic and logic unit means interconnected to said register means and said OR array means, for executing operations on data received from said register means in accordance with ones of said plurality of control signals and for generating output data;

control register means interconnected to said OR array means and said AND array means for receiving ones of said plurality of control signals for controlling execution of said program instructions within said AND array means and;



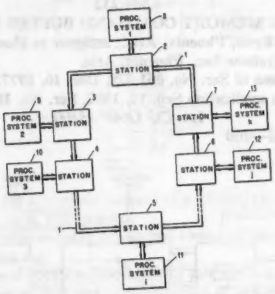
output register means interconnected to receive said output data and ones of said plurality of control signals for buffering said output data between said arithmetic and logic unit means and said data sources external of the processor under control of ones of said plurality of control signals.

4,354,229

LOOP INITIALIZATION MECHANISM FOR A PEER-TO-PEER COMMUNICATION SYSTEM

Jonathan B. Davis, Boca Raton; Charles S. Lanier, Delray Beach; Daniel T. W. Sze, Boca Raton, and Leonard Weiss, Hollywood, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,052
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **15 Claims**



1. In a serial loop data communication system including a plurality of stations serially interconnected by way of a communications link, said stations being further characterized with respect to any selected station as preceding stations that are upstream on said link from said selected station or succeeding stations that are downstream from said selected station, said stations operating on a peer-to-peer basis, and each of said stations being designated by a uniquely identifiable address code, said stations transmitting and receiving message frames including synchronization characters for transfer of information in the form of messages from one station to another, said frames being categorized as available or unavailable, each station transmitting only on frames that are marked as available or that have an address code equal to the station address code and each station marking frames transmitted by it as unavailable if the station has inserted information in said frames and each station further marking frames transmitted by it as available if the station has no information to transfer, and each of said stations incorporating a modem for handling link related functions, such as information coding, and modulation, and the like, a loop initialization system for achieving synchronized frame transmission around the loop for all stations upon system start or after loss of frame synchronization on the loop by defining one of said stations as a temporary master station to create available message frames for use in establishing synchronized operation of said system and comprising at each station:

synchronization means including synchronization circuitry at each modem responsive to synchronization characters transmitted on said communications link for establishing synchronization of said station with other stations in said system and for detecting an out of sync condition such as upon start up of said system or upon unsuccessful modem synchronization efforts exceeding a given time period, said synchronization means being operable to reset the related modem synchronization circuitry and to transmit unavailable frames including a sync character and a code violation character followed by the address of its related station and all byte fields of consecutive frames at a local modem clock rate;

means for locally receiving at any station an address code transmitted from the preceding station in said loop;

means for comparing the received address code with the address code of the related receiving station;

means for transmitting the address code received from the preceding station to the next succeeding station in said loop if the value of the received address code is less than that of the receiving station;

means for transmitting the local address code of the receiving station to the next succeeding station in said loop if the value of the received address code is greater than that of the receiving station; and

mode means operable upon the related modem receiving from the preceding station an address code corresponding to the address code of the receiving station for a predetermined minimum number of times to set the respective modem to a temporary master state with respect to all other modems in said system, all other modems thereby being conditioned to a slave state and to continue generation by said temporary master modem of unavailable message frames including synchronization characters over said communications link for use by all other modems in a slave state to achieve synchronization.

4,354,230

SYNCHRONIZED, FAIL-OPERATIONAL, FAIL-SAFE MULTI-COMPUTER CONTROL SYSTEM

Richard D. Murphy, Monroe, and Douglas H. Clelford, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 938,583, Aug. 31, 1978. This application May 19, 1980, Ser. No. 151,489
Int. Cl.³ G06F *15/16, 9/46*
U.S. Cl. 364—200 **3 Claims**

1. A multi-computer processing control system including a plurality of computer systems, each of said computer systems comprising:

a central processing unit (CPU) operating under a program of instructions and having interrupt handling capability for running a plurality of asynchronous, unrelated programs:

a plurality of memory devices;

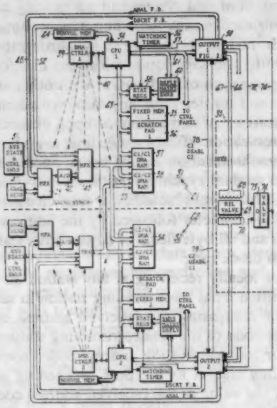
a plurality of input sources for providing data to said computer system in response to which said computer system contributes to the control of said process;

a data link to another one of said computer systems;

a direct memory access controller for communicating data between said input sources, at least one memory of the related computer system and, over said data link, at least

one memory of said another one of said computer systems; and

a master clock means for providing a variety of clock signals for the control of the related computer system and a series of real time interrupt commands for interrupting said CPU, the master clock means of said computer system being interconnected with the master clock means of said another one of said computer systems for recognizing the first to be generated, specific one of said real interrupt



command of any of the interconnected master clock means, in all of said computer systems to, said computer system and said other computer systems each interrupting the related CPU in response to said first to be generated real time interrupt command thereby synchronizing said computer system, said master clock means being connected to said direct memory access controller to synchronize said direct memory access controller with the related CPU of said computer system.

4,354,231

APPARATUS FOR REDUCING THE INSTRUCTION EXECUTION TIME IN A COMPUTER EMPLOYING INDIRECT ADDRESSING OF A DATA MEMORY

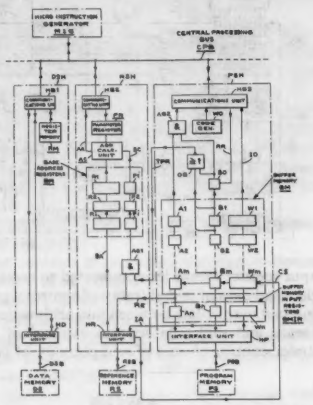
Karl-Johan V. Carlsson, Solna, and Hans O. S. Kjoller, Västerhaninge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 97,178, Nov. 26, 1979, abandoned, which is a continuation of Ser. No. 877,255, Feb. 13, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,260

Int. Cl.³ G06F *9/30*

U.S. Cl. 364—200 **5 Claims**

1. In a computer under control of instructions from a program memory and employing indirect addressing of a data memory included in the computer, where an absolute address to the data memory is derived in an address processing means from a base address which is read from a reference memory in correspondence to an input address to the reference memory and from at least one address parameter which has been stored in a register memory in connection with the execution of an instruction read from the program memory, appartaus for reducing the instruction execution time comprising a buffer memory means for sequentially and temporarily storing in an execution queue instructions read from said program memory, a read-out means for reading base addresses from said reference memory in correspondence to said input address and a read signal, the input address as well as the read signal being derived from an instruction just supplied to said execution queue if the instruction is of a first type which concerns writing or reading in said data memory, a registration means for giving an indication that an instruction which is of a second type that places address parameters in the register memory has been supplied from the output of said buffer memory, a first activation means for initiating transfer of said at least one address parameter from said register memory to said address processing means if said indication is present in said registration means and the instruction being in turn for feed-out to the output of said buffer memory means is of said first type and for removing said indication in the registration means when said transfer has



been executed, and a second activation means connected to said address processing means and responsive to a base address which is being read out from said reference memory to said address processing means for initiating the calculation of said absolute address when simultaneously none of the instructions stored ahead of said instruction just supplied to said buffer memory means is of said second type and no indication is present in said registration means.

4,354,232

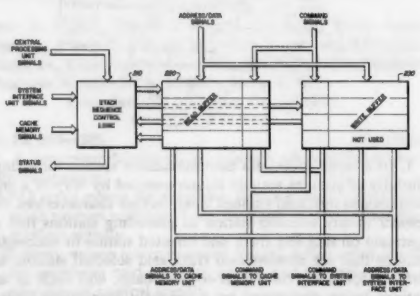
CACHE MEMORY COMMAND BUFFER CIRCUIT

Charles P. Ryan, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation of Ser. No. 861,228, Dec. 16, 1977, abandoned. This application Sep. 11, 1980, Ser. No. 186,362

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **5 Claims**



1. In a computer system which includes a central processing unit (CPU), a high speed cache memory unit, and a system interface unit (SIU) for controlling command and data transfer between a lower speed main memory and either said CPU or said cache memory unit, a cache memory cammand buffer circuit for allowing said cache memory unit and said SIU to operate independent of each other and for ensuring that com-

mands to said cache memory unit and to said SIU are executed in proper sequence, said cache memory command buffer circuit comprising:

a read buffer for storing read signals from said CPU to said cache memory unit or to said SIU, said read signals including command, data, and address signals;

a write buffer for storing write signals from said CPU to said cache memory unit or to said SIU, said write signals including command, data, and address signals; and

a sequence control circuit connected to said read and writer buffers and receiving signals from said CPU, said SIU, and said cache memory unit, said sequence control circuit including means for storing said read signals from said CPU into said read buffer and said write signals from said CPU into said write buffer and outputting said read and write signals from said buffers to said cache memory unit and to said SIU in the proper sequence and without interrupting the operation of either said cache memory unit or said SIU.

4,354,233

ROTARY DRILL AUTOMATIC CONTROL SYSTEM

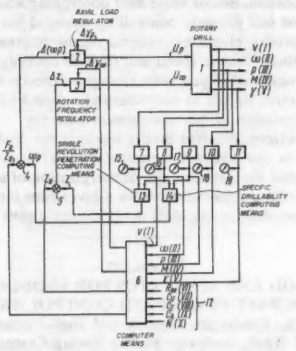
Alexei A. Zhukovsky, ulitsa K. Tsetkin, 32, kv. 43; Vladimir D. Butkin, ulitsa K. Tsetkin, 30-a, kv. 77, and Mikhail I. Kulachek, prospekt Pobedy, 155, kv. 134, all of Chelyabinsk, U.S.S.R.

Filed Jun. 25, 1980, Ser. No. 162,805

Claims priority, application U.S.S.R., May 3, 1972, 1779660; Feb. 7, 1977, 2451473

Int. Cl.³ G06F *15/46;* G06G *7/48;* E21C *1/10*

U.S. Cl. 364—420 **13 Claims**



1. A system for automatic control of a drilling rig utilizing a rotary drilling tool, comprising:

a drilling rate transducer connected to one of the outputs of said drilling rig;

a transducer of rotation frequency of said drilling tool, connected to a second one of the outputs of said drilling rig;

a transducer of axial load on said drilling tool, connected to a third one of the outputs of said drilling rig;

transducer of torque applied to said drilling tool, connected to a fourth one of the outputs of said drilling rig;

a transducer of vibration speed of said drilling tool, connected to a fifth one of the outputs of said drilling rig;

a unit for computing the value of penetration of said drilling tool per single revolution thereof connected to said drilling rate transducer and to said drilling tool rotation frequency transducer;

a unit for computing the current value of specific drillability of the rock being drilled, connected to said drilling tool rotation frequency transducer and to said drilling tool axial load transducer;

computer means designed for computing the optimum value of said specific drillability of the rock being drilled and the optimum value of penetration of said drilling tool per single revolution thereof, as well as for computing a signal for adjustment of the drilling tool rotation frequency and drilling tool axial load, said computer means comprising a first input connected to said drilling rate transducer, a second input connected to said drilling tool rotation frequency transducer, a third input connected to said drilling tool axial load transducer, a fourth input connected to said drilling tool torque transducer, a fifth input connected to said drilling tool vibration speed transducer, a sixth input to which is applied a signal proportional to the drilling tool motor potential, a seventh input to which is applied a signal proportional to the drilling tool cost value, an eighth input to which is applied a signal proportional to the cost of electric energy consumed by the drilling rig, a ninth input to which is applied a signal proportional to the cost of the drilling rig depreciation and service personnel wages, and a tenth input to which is applied a signal proportional to the power consumed by the drilling rig;

a first comparison element having one input connected to said unit for computing the current value of specific drillability and another input connected to one of the outputs of said computer means from which is supplied a signal proportional to the optimum value of specific drillability of the rock being drilled;

second comparison element having one input connected to said unit for computing the current value of drilling tool penetration and another input connected to a second output of said computer means from which is supplied a signal proportional to the optimum value of drilling tool penetration per single revolution thereof;

a drilling tool rotation frequency regulator having one input connected to the output of said second comparison element and another input connected to a fourth output of said computer means, the output of said regulator being connected to a second input of the drilling rig.

4,354,234

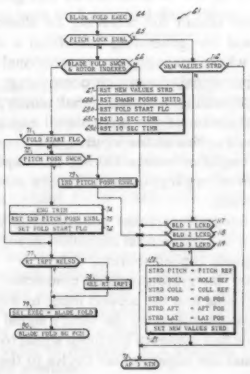
AUTOMATIC LOCK-POSITIONING OF FOLDABLE HELICOPTER BLADES

Roderick A. MacLennan, Stratford, and William J. Mulvey, North Haven, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 10, 1980, Ser. No. 195,808

Int. Cl.³ G06F *15/20;* B64C *27/50*

U.S. Cl. 364—424 **3 Claims**



1. A helicopter having foldable main rotor blades, the pitch angles of which are positionable by push rods in dependence upon the vertical position and tilt of a swash plate cooperating with said push rods, said blades being lockable at specific pitch angles as a prerequisite to folding, said swash plate being positioned by a plurality of servos, each of said servos being sepa-

rately operable in response to corresponding outputs of a mixer, the mixer in turn receiving inputs from pitch, roll and collective channels, each of said channels including an electrically operated trim actuator for providing a corresponding input to said mixer in response to a related trim command signal from signal processing means, characterized by:

a position detector for each of said servos, each position detector providing a servo position signal indicative of the position of a corresponding one of said servos; and

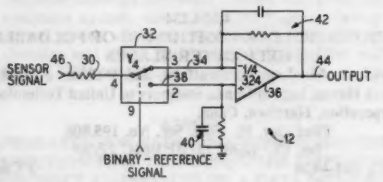
said signal processing means comprising means for storing a plurality of pitch, roll and collective reference signals related to predetermined positions of said servos at which rotor blade pitch angle is correct for locking, and for providing trim command signals to said pitch, roll and collective trim actuators in respective response to said pitch, roll and collective reference signals, thereby to cause said mixer to drive said servos substantially to said predetermined positions as indicated by corresponding ones of said servo position signals.

4,354,235

GUIDANCE SYSTEM DETECTOR CIRCUIT

Thomas R. Blakeslee, Woodside, Calif., assignor to Portec, Inc., Oak Brook, Ill.

Filed Jun. 30, 1980, Ser. No. 164,077
Int. Cl.³ G06J *1/00*; G06G *7/18*; H03K *5/00*
U.S. Cl. 364—424 **10 Claims**



1. A detector circuit for receiving an alternating current input signal and for generating therefrom a direct current output signal whose magnitude is proportional to the amplitude of the input signal, the circuit comprising

means for generating a binary signal which is true during minus half cycles of the input signal and is false during positive half cycles of the input signal,

differential amplifier means having an output terminal, a first, noninverting input terminal and a second, inverting input terminal,

first signal integrating means connected to the first input terminal of the differential amplifier means for time integrating signals applied thereto,

second signal integrating means connected between the output terminal and the second input terminal, and

switch means controlled by the binary signal for supplying the positive half cycles of the input signal to the first input terminal and the negative half cycles to the second input terminal,

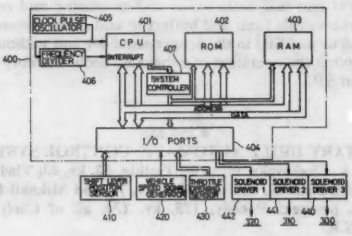
whereby the direct current level of the output of the differential amplifier will rise as the amplitude of the input signal increases just enough to keep the voltages on the first and second input terminals equal so that the voltage at the output terminal is proportional to the amplitude of the sensor signal.

4,354,236

SYSTEM FOR CONTROLLING THE HYDRAULIC PRESSURE DURING A SHIFT OPERATION OF AN AUTOMATIC, VARIABLE SPEED TRANSMISSION

Nobuaki Miki; Mutsumi Kawamoto, both of Nagoya; Hiroyuki Amano, Chiryu; Tsuneo Hida, Toyokawa, and Tsuyoshi Yoshida, Toyota, all of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

Filed Jan. 24, 1980, Ser. No. 114,936
Claims priority, application Japan, Feb. 14, 1979, 54-16482
Int. Cl.³ B60K *41/08, 41/22*; G06F *15/20*
U.S. Cl. 364—424.1 **5 Claims**



1. A system for controlling an automatic variable speed transmission including an hydraulic circuit having a plurality of oil pressure control valves and flow path switching means for selectively engaging or disengaging clutches and brakes of the transmission, one or more shift controlling solenoid valves and at least one pressure controlling solenoid valve, said system comprising electronic control means responsive to shift lever position, vehicle speed and throttle opening and having memory means with gear ratio change reference data for providing control signals to said solenoid valves to thereby control the operation of the transmission wherein:

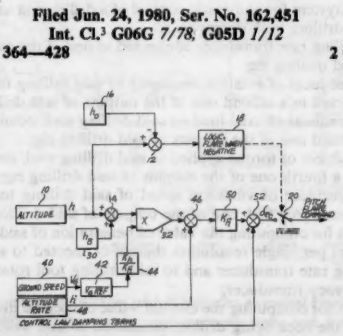
said electronic control means controls the hydraulic pressure in the hydraulic control circuit by performing a repeated energization and deenergization of said pressure controlling solenoid valve for a given time interval which is dependent on the shift mode during a shift operation.

4,354,237

METHOD AND APPARATUS FOR PRODUCING AN AIRCRAFT FLARE PATH CONTROL SIGNAL

Antonius A. Lambregts, Renton, and Rolf Hansen, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 24, 1980, Ser. No. 162,451
Int. Cl.³ G06G *7/78*, G05D *1/12*
U.S. Cl. 364—428 **2 Claims**



1. Apparatus for producing an aircraft flare path control signal comprising:

means for producing a signal h representative of aircraft altitude;

means for producing a signal V_G representative of aircraft groundspeed;

means for producing a signal $\dot{h}$ representative of aircraft altitude rate;

computer means for producing a pitch control surface command signal δ_{ec} according to the relationship:

$$\delta_{ec}=K_{\delta}[\dot{h}+V_G\{(K_h/K_{\dot{h}})/V_{G\,REF}\}(h+h_B)]$$

where K_{δ}, K_h, $V_{G\,REF}$ and h_B are constants selected for a given system configuration; and

control means for actuating the aircraft control surfaces to track said command signal δ_{ec} whereby aircraft landing flare distance is substantially unaffected by the aircraft's relative groundspeed.

4,354,238

METHOD OF CONTROLLING AIR-FUEL RATIO OF INTERNAL COMBUSTION ENGINE SO AS TO EFFECTIVELY MAINTAIN THE AIR FUEL RATIO AT A DESIRED AIR-FUEL RATIO OF $\lambda=1$

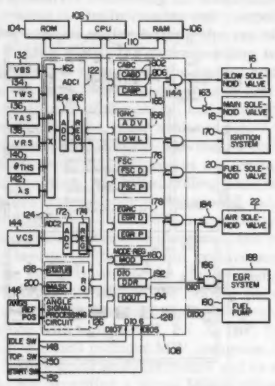
Toshio Manaka; Takeshi Atago; Toshio Ishii, and Yasunori Mouri, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,481

Claims priority, application Japan, Jul. 2, 1979, 54-82659

Int. Cl.³ F02B *3/04;* **F02D** *35/00*

U.S. Cl. 364—431.05 **32 Claims**



1. In an air-fuel ratio control system for an internal combustion engine which includes a plurality of sensors for detecting operating conditions of said engine, an oxygen sensor for detecting oxygen concentration in the exhaust gas from said engine, actuator means for supplying fuel to said engine, central processing means for executing digital operations, random access memory means for storing outputs from said central processing means, read-only memory means adapted to cooperate with said random access memory means, and input/output means coupled to said plurality of sensors for fetching data concerning the operating conditions of said engine detected by said sensors and supplying said data to said central processing means on one hand and on the other hand adapted to receive output signals from said central processing means and supply engine control signals to said actuator means; improvement residing in a method for controlling said air-fuel ratio to be effectively maintained at a desired air-fuel ratio of $\lambda=1$, comprising:

a step of performing a feedback control for maintaining said air-fuel ratio effectively maintained at a desired air-fuel ratio of $\lambda=1$ on the basis of the output from said oxygen sensor in response to the absence of a set signal for commanding interruption of said feedback control at a predetermined area in said random access memory means;

a step of performing a map control for maintaining said air-fuel ratio to be effectively maintained at a desired air-fuel ratio of $\lambda=1$ on the basis of map data read out from said read-only memory means in which said map data has been previously stored in correspondence to operation parameters of said engine, when said set signal is set at said area of said random access memory means;

a first step for clearing the set state of said set signal in response to a significant change in the engine operation appearing during said map control period; and

a second step for setting said set signal.

8. A method of operating a processor-controlled apparatus for controlling the operation of an internal combustion engine having an air-fuel mixture supply system for supplying an air-fuel mixture to said engine, and an exhaust sensor for sensing a prescribed characteristic of exhaust gas emitted from said engine, comprising the steps of:

(a) storing, in memory, a predetermined data map of prescribed data values associated with air-fuel ratios of said air-fuel mixture for a plurality of values of selected engine conditions;

(b) retrieving, from said memory, respective data values in accordance with sensed values of said selected engine conditions and controlling said air-fuel ratio of said air-fuel mixture in accordance with said retrieved data values; and

(c) in response to the occurrence of a prescribed engine operation condition, interrupting step (b) and controlling said air-fuel ratio of said air-fuel mixture in accordance with the sensed prescribed characteristic of exhaust gas emitted from said engine, wherein

step (c) comprises the steps of:

(c1) monitoring the output of said exhaust sensor and producing an exhaust feedback control signal in accordance therewith, and

(c2) controlling said air-fuel mixture on the basis of said exhaust feedback control signal produced in step (c1), and further including the step of:

(d) in response to the occurrence of a predetermined engine operation condition, interrupting step (c) and reinitiating (b), and wherein the reinitiated step (b) comprises the steps of:

(b1) retrieving, from said memory, respective data values in accordance with sensed values of said selected engine conditions;

(b2) modifying said retrieved data values in accordance with said exhaust feedback control signal produced in step (c1), and

(b3) controlling said air-fuel ratio of said air-fuel mixture in accordance with said modified data values.

4,354,239

FUEL INJECTION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hidetoshi Kanegae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 12, 1980, Ser. No. 129,729

Claims priority, application Japan, Mar. 15, 1979, 54-29386

Int. Cl.³ F02M *51/00;* **F02B** *3/04;* **F02D** *5/02*

U.S. Cl. 364—431.05 **6 Claims**

1. A fuel injection control system for an internal combustion engine with a fuel injection valve, the system including a microcomputer which calculates a value of fuel injection time duration Ti based on detected operating parameters of the engine including crank angle position, said system comprising:

(a) means for generating a first injection signal to open said injection valve in response to a detected predetermined crank angle position;

(b) means for producing clock pulse signals having a period Tc, said period Tc being a small fraction of the fuel injection time duration Ti;

(c) a counter;

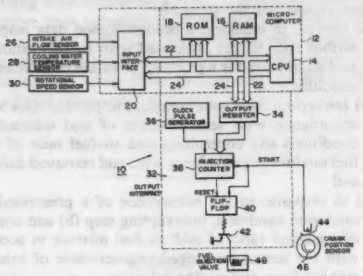
(d) said microcomputer including a CPU, a data memory storage for storing data and a program memory storage

for storing a control program for controlling said calculation and causing said CPU to

(i) compare the calculated value Ti with a plurality of limit values to determine one of a plurality of ranges for Ti, each range having an upper limit value of Ti,

(ii) generate a set value signal (OR) indicative of the calculated value of Ti,

(iii) generate a clock control signal (CR) corresponding to said determined range for Ti, said clock control signal indicative of said clock period, Tc, wherein for each of said ranges of Ti, the ratio of the upper limit value of Ti to the value Tc is approximately equal to the largest count value within the capacity of said counter;



(e) said clock pulse signal producing means including means responsive to said clock control signal for adjusting the period Tc of said clock pulse signals in dependence upon said clock control signal;

(f) said counter connected to receive said clock pulse signals for counting same and connected to receive said set value signal (OR) for setting said counter to said set value indicative of said calculated value Ti;

(g) said counter operative to start counting said clock pulse signals upon opening of said fuel injection value and generating a second injection signal when the number of counted clock pulse signals reaches said set value, and

(h) means responsive to said second injection signal for closing said injection valve.

4,354,240

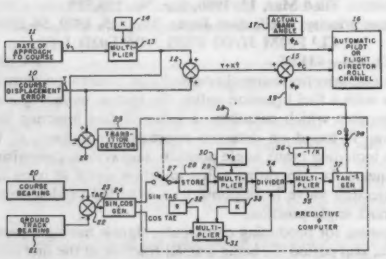
FLIGHT PATH TRANSITION CONTROL APPARATUS WITH PREDICTIVE ROLL COMMAND

Edmond E. Olive, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,213

Int. Cl.³ G05D *1/08*; B64C *13/16*

U.S. Cl. 364—434 **17 Claims**



1. Apparatus for controlling an aircraft to execute a capture maneuver of a predetermined course along an exponential transition curve comprising

means for generating a control law signal representative of said exponential transition curve,

means for generating a predictive roll attitude signal representative of aircraft roll attitude for maintaining said aircraft on said exponential transition curve,

means for combining said control law signal and said predictive roll attitude signal to provide a roll attitude command signal for controlling said aircraft to execute said exponential transition curve,

transition detector means for providing a capture maneuver initiation signal in accordance with initiation of said capture maneuver, and

means for switchably coupling said predictive roll attitude signal to said means for combining said control law signal and said predictive roll attitude signal in accordance with said capture maneuver initiation signal.

4,354,241

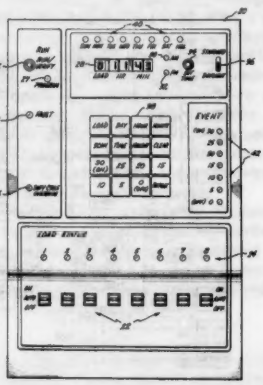
PROGRAMMABLE ELECTRONIC REAL-TIME LOAD CONTROLLER PROVIDING FOR ADAPTATION OF LOAD CONTROL IN RESPONSE TO VARYING ENVIRONMENTAL CONDITIONS

Lawrence J. Barello, Seattle, Wash., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Dec. 27, 1979, Ser. No. 107,554

Int. Cl.³ H02J *13/00*; G06F *15/56*

U.S. Cl. 364—492 **46 Claims**



1. An electronic controller for controlling the energization states of a plurality of electrical loads, said controller comprising:

a plurality of load control circuits, each said load control circuit being adapted to be interconnected with a load, and having a load-on state when its load is to be on, and a load-off state when its load is to be off;

clock means for determining real-time;

sensor means for sensing at least one environmental temperature at a facility at which the plurality of electrical loads are located;

event memory means storing a time schedule for real-time control of the plurality of electrical loads;

program memory means storing a set of program instructions; and,

program means responsive to said set of stored program instructions for:

obtaining said time schedule from said event memory means;

obtaining a sensed environmental temperature from said sensor means;

modifying said time schedule in accordance with said sensed environmental temperature;

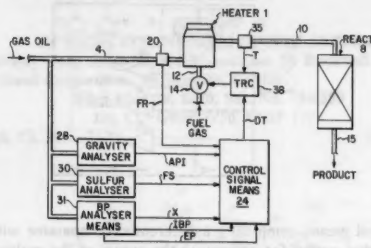
obtaining real-time from said clock means; and,

placing said load control circuit for each load in said load-on and said load-off states by comparing said real-time with said modified time schedule.

4,354,242
FEEDSTOCK TEMPERATURE CONTROL SYSTEM

Charles A. Ganster, Houston, and Gerald V. Nelson, Nederland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,725
Int. Cl.[3] C10G *21/00*; G06F *15/46*
U.S. Cl. 364—501 **11 Claims**

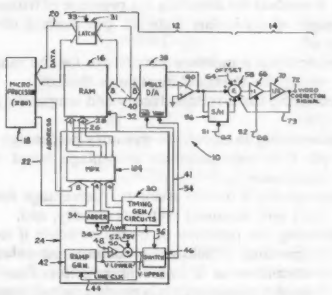


1. A control system for controlling the temperature of gas oil being fed to a reactor in a hydrotreating unit comprising heater means receiving the gas oil for heating the gas oil in accordance with a control signal DT corresponding to a desired temperature for the gas oil entering the reactor and providing the heated gas oil to the reactor, gravity analyzer means for sensing the API gravity of the gas oil and providing a signal API corresponding thereto, sulfur analyzer means for sensing the sulfur content of the gas oil and providing a corresponding signal FS, boiling point analyzer means for sensing the 50% boiling point temperature, the initial boiling point temperature and the end point temperature of the gas oil and providing corresponding signals X, IBP and EP, respectively, flow rate means for sensing the flow rate of the gas oil and providing a signal FR representative thereof, and control signal means connected to the heater means, to the gravity analyzer means, to the sulfur analyzer means, to the boiling point analyzer means and to the flow rate means for providing control signal DT in accordance with signals API, FS, X, IBP, EP and FR, said control signal means includes MW computer means connected to the boiling point analyzer means and to the gravity analyzer means for providing a signal MW corresponding to the molecular weight of the gas oil in accordance with signals X and API, SF computer means connected to the boiling point analyzer means for providing a signal SF corresponding to a sulfur factor of the gas oil which is at the estimated distillation temperature at which half of the sulfur in the feedstock is distilled overhead, subtracting means connected to the boiling point analyzer means for subtracting signal IBP from signal EP to provide signal R corresponding to the temperature range of the gas oil, ALHSV signal means connected to the flow rate means and receiving a direct current voltage CAT.VOL. corresponding to the catalyst volume of the reactor in barrels for providing a signal ALHSV corresponding to the actual liquid hourly space velocity of the gas oil in accordance with signal FR and the voltage CAT VOL, A signal means connected to the MW computer means, to the SF computer means, to the subtracting means, to the sulfur analyzer means and to the gravity analyzer means for providing a signal A corresponding to a feedstock correlating parameter in accordance with signals MW, SF, R, FS and API, CT signal means connected to the A signal means for providing signals CT95, CT90, CT80 and CT70, corresponding to the correction temperature for 95%, 90%, 80% and 70% desulfurization, respectively, RT signal means connected to the CT signal means for providing signals RT95, RT90, RT80 and RT70 corresponding to the reciprocal temperatures for 95%, 90%, 80% and 70% desulfurization, respectively, in accordance with signals CT95, CT90, CT80, and CT70, sulfur signal means for providing a signal DPS corresponding to the desired product sulfur content and a signal DDS corresponding to a percent desulfurization necessary to achieve the desired product sulfur content in accordance with signal FS, K signal means connected to the sulfur analyzer means for providing signals K95, K90, K80 and K70, corresponding to reaction rate constants for 95%, 90%, 80% and 70% desulfurization, respectively, in accordance with signal FS, slope and intercept signal means connected to the RT signal means, to the sulfur signal means and to the K signal means for providing signals m and b corresponding to the slope and intercept, respectively, of a straight line approximating the kinetic relationship between the reaction rate constant and the reciprocal temperatures in accordance with signals DDS, RT95, RT90, RT80, RT70, K95, K90, K80 and K70, Z signal means connected to the ALHSV signal means and to the sulfur signal means for providing a signal Z corresponding to a reaction rate constant for the desired product sulfur content in accordance with signals ALHSV and DPS, and temperature signal means connected to the slope and intercept signal means and to the Z signal means for providing signal DT in accordance with signals m, b, and Z.

4,354,243
TWO DIMENSIONAL INTERPOLATION CIRCUIT FOR SPATIAL AND SHADING ERROR CORRECTOR SYSTEMS

John O. Ryan, Cupertino, and Joseph L. Corkery, San Carlos, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1980, Ser. No. 139,512
Int. Cl.[3] G06F *15/353*; H04N *5/38*
U.S. Cl. 364—515 **23 Claims**



1. A circuit for interpolating between values taken from two spaced rows of data points to define an interpolated output, comprising;

means for providing a selected stream of two sets of upper and lower data words corresponding to data from respective upper and lower rows of points disposed above and below a line therebetween;

multiplying means including a D/A converter for generating a selected sequence of product voltages by multiplying a selected data word of a row with a voltage indicative of the position of the line between the rows, wherein the sequence of product voltages define an interleaved sequence of the upper and lower data words and two voltage levels;

summing means for adding given voltages in the product voltage sequence to provide a final sequence of vertically interpolated voltages;

said summing means including a sample/hold circuit coupled to the multiplying means to delay selected ones of the product voltages, a junction for receiving the undelayed

and delayed sequence of product voltages, a negative waveform of the interpolated output, and a DC offset voltage;

said summing means generating a difference voltage indicative of what the instantaneous value of the interpolated output should be; and

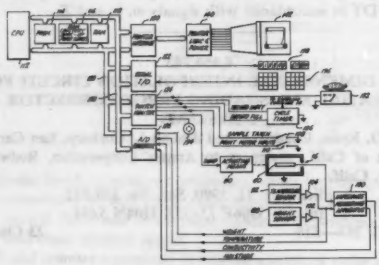
means for horizontally interpolating between the final sequence of voltages to define the interpolated output.

4,354,244

METHOD AND APPARATUS FOR DETERMINING THE MOISTURE CONTENT OF PARTICULATE MATERIAL THAT MAY CONTAIN AN UNKNOWN AMOUNT OF MOISTURE IN A FROZEN STATE

Christopher S. Miller, Seattle; Daniel F. Pope, Issaquah, and Jon V. Hokanson, Everett, all of Wash., assignors to Eur-Control M&D, U.S.A., Inc., Bellevue, Wash.

Filed Feb. 25, 1980, Ser. No. 124,339
Int. Cl.³ G06G 7/58
U.S. Cl. 364—556 **94 Claims**



1. A method for detecting the presence of frozen moisture in a sample of particulate material, said method comprising the steps of:

determining a moisture percentage for the sample by measuring the electrical impedance thereof;

measuring the wet bulk density and temperature of the sample;

determining an electronic oven dry percentage for the sample from said moisture percentage based on electrical impedance;

determining a density oven dry percentage for the sample from said measured wet bulk density; and,

detecting the presence of frozen moisture if said measured temperature is below a predetermined value and if said electronic oven dry percentage differs from said density oven dry percentage in a predetermined manner.

4,354,245

CYCLIC OR PERIODIC ANALOG SIGNAL PROCESSING CIRCUIT

Francois E. Delegue, Paris, France, assignor to Thomson-CSF, Paris, France

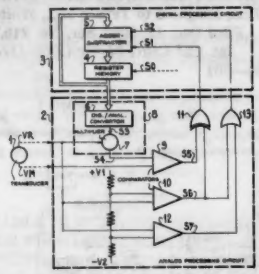
Filed Aug. 6, 1980, Ser. No. 175,877
Claims priority, application France, Aug. 10, 1979, 79 20521
Int. Cl.³ G06J 1/00
U.S. Cl. 364—606 **7 Claims**

1. A cyclic analog signal processing circuit, intended for processing signals from a plurality n of linvars, each linvar supplying an induced signal V_{Mi} proportional to the displacement to be measured and to the reference signal V_{Ri} supplying the transducer, said circuit comprising:

multiplexer means for successively transmitting the analog signals of the transducers, supplying the induced signal V_{Mi} by a first output and the reference signal of the corresponding transducer by a second output;

a memory for successively storing the digital values V_{Mi}/V_{Ri} representative of the respective displacements of the transducers, said memory being relooped on itself across an adder-subtracter circuit;

a multiplier for multiplying the reference signal V_{Ri} of the second output by the corresponding value V_M/V_R extracted from the memory and being converted in analog form in a digital-analog conversion circuit;



control means comprising a differential comparator with a digital output for comparing the output of the multiplier with the induced signal V_{Mi} of the first output and for supplying a binary control signal; and

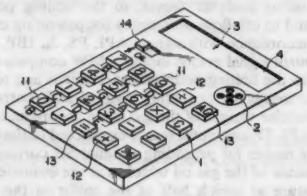
a circuit for the incrementation and decrementation control of the adder-subtracter circuit as a function of the state of said binary control signal.

4,354,246

KEY INPUT INDICATING TONE GENERATING APPARATUS FOR SMALL-SIZED ELECTRONIC DEVICES

Hidetaka Fujisawa, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,737
Claims priority, application Japan, Dec. 21, 1978, 53-157961
Int. Cl.³ G06F 3/16
U.S. Cl. 364—709 **9 Claims**



1. A key input indicating tone generating apparatus for small-sized electronic devices, comprising:

a key input section having a plurality of groups of keys;

judging means coupled to the key input section for judging a key depressed and determining the group of keys to which the depressed key belongs;

frequency control means coupled to said judging means;

an oscillator for generating signals having a given frequency;

frequency forming means coupled to the oscillator and to the frequency control means for selectively generating signals of predetermined frequency and signals of different frequencies, using at least the given frequency signals from the oscillator; and

sound generating means coupled to the frequency forming means and responsive to a single frequency signal from the frequency forming means, for generating tones of different pitches as a function of the frequency of the signal received from the frequency forming means;

said frequency control means controlling the frequency forming means to cause the frequency forming means to generate said signals of different frequencies when it is judged by the judging means that at least one key of a first group are depressed and to cause said frequency forming means to generate said signals of predetermined frequency when it is judged by the judging means that at least one key of a second group is depressed;

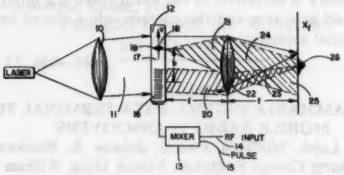
whereby said sound generating means generates a plurality of tones of respective different pitches when keys of the first group are depressed and tones of the same pitch when keys of the second group are depressed.

4,354,247

OPTICAL COSINE TRANSFORM SYSTEM

Shi-Kay Yao, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 29, 1980, Ser. No. 154,359
Int. Cl.³ G06F 7/56; G02F 1/11
U.S. Cl. 364—713 **10 Claims**



1. An optical signal processing system comprising:

means for providing an information containing input signal;

a source for emitting a beam of radiation;

collimation means in the path of said beam;

acoustic-optical modulation means disposed in the path of said collimated beam and functioning to modulate at least two spatially spaced-apart portions of said beam with different signals, to produce first and second spatially separated modulated beams, one of said signals being said information containing input signal and another of said signals being a predetermined reference signal;

Fourier transform lens means disposed in the path of said first and second modulated beams; and

detector means disposed in the path of said first and said second beams and spaced apart from said Fourier transform lens means at the focal plane thereof for detecting the resulting optical intensity distribution of the interaction of said first and said second modulated beams, said resulting distribution representing a predetermined transfer function of said information containing signal.

4,354,248

PROGRAMMABLE MULTIFREQUENCY TONE RECEIVER

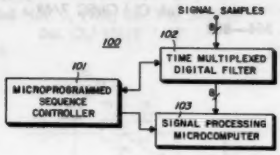
David R. L. Conger, Palo Alto, Calif.; Ira A. Gerson, Hoffman Estates, and Richard E. White, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 28, 1979, Ser. No. 98,093
Int. Cl.³ G06F 15/31
U.S. Cl. 364—724 **51 Claims**

1. Apparatus for filtering an input signal comprised of digitally coded samples, said filtering apparatus comprising:

digital filter means responsive to a filter start signal for receiving each digitally coded sample of the input signal and performing an M-order filtering operation selected by select signals, where M is an integer number greater than one; said digital filter means providing an output signal and a filter done signal upon completion of the selected M-order filtering operation; and

sequence control means responsive to each digitally coded sample for generating a sequence of control signals including filter start signals and select signals for successively applying the sample to the digital filter means and enabling the digital filter means to perform K cascaded M-order filtering operations, where K is an integer number greater than one, the sequence of control signals further including a halt signal after each filter start signal, and the sequence control means being disabled by the halt signal and subsequently re-enabled by the filter done signal.

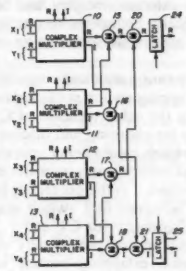


4,354,249

PROCESSING UNIT FOR MULTIPLYING TWO MATHEMATICAL QUANTITIES INCLUDING AT LEAST ONE COMPLEX MULTIPLIER

Thomas M. King, Mesa, and Sam M. Daniel, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 24, 1980, Ser. No. 132,963
Int. Cl.³ G06F 7/52
U.S. Cl. 364—754 **6 Claims**



1. A digital processing unit for multiplying two N-component mathematical quantities, X and Y, wherein each component is represented by an m bit digital word representative of a real portion and an m bit digital word representative of an imaginary portion, said unit comprising:

(a) N complex multipliers each having an X input and a Y input, each input having m leads adapted to receive the real portion in parallel and m leads adapted to receive the imaginary portion in parallel, and an output having at least m+1 leads for the real portion and at least m+1 leads for the imaginary portion;

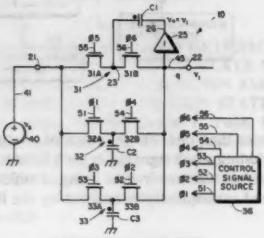
(b) real portion summing means connected to the m+1 leads for the real portion at the output of each of said N complex multipliers for providing a real output component including at least m+2 parallel bits representative of the sum of the real portions from each of said complex multipliers; and

(c) imaginary portion summing means connected to the m+1 leads for the imaginary portion at the output of each of said N complex multipliers for providing an imaginary output component including at least m+2 parallel bits representative of the sum of the imaginary portions from each of said complex multipliers.

4,354,250
SWITCHED-CAPACITOR SOURCE RESISTOR SIMULATION CIRCUIT

Man S. Lee, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Aug. 11, 1980, Ser. No. 177,026
Int. Cl.³ G06G 7/48
U.S. Cl. 364—802 **15 Claims**



1. An integrated switched capacitor circuit for simulating a source resistor comprising:

a first node for electrical connection to the output terminal of a voltage source that is associated with a ground reference potential;

a second node;

first and second capacitor means C1 and C2, each having a pair of terminals;

voltage follower means having an input terminal electrically connected to said second node, which is adapted for connection to external circuitry, and having an output terminal electrically connected to one terminal of C1;

first means electrically connecting one terminal of C2 to ground;

first switch means periodically operative in first and second non-overlapping switch states for periodically electrically connecting the other terminal of C1 to said first and second nodes for charging and discharging C1, respectively; said first switch means being operative in each of said first and second switch states once during each T second time interval, where T is the difference between times of termination of adjacent first switch states and f=1/T is the sampling frequency for C1; and

second switch means periodically operative in third and fourth non-overlapping switch states for periodically connecting the other terminal of C2 to said first and second nodes for charging and discharging C2, respectively; said second switch means being operative for terminating a third switch state at a first time for causing C2 to sample the voltage at said first node, for causing C2 to hold the sampled voltage, and for subsequently operating in a fourth state for discharging C2;

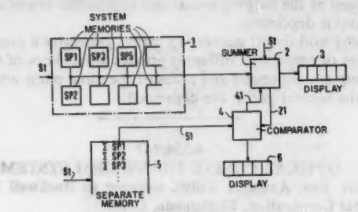
said circuit simulating a source resistor across said nodes when said first node is connected to the output terminal of a voltage source.

4,354,251
DEVICE FOR TESTING PROGRAMS FOR NUMERICAL CONTROL OF MACHINE TOOLS

Friedrich-Wilhelm Hellwig, Hemhofen, and Christian Seeliger, Grossenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,574
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913999
Int. Cl.³ G06F 11/16, 11/32, 3/14
U.S. Cl. 364—900 **3 Claims**

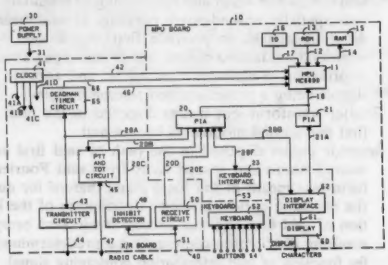
1. A device for testing the system program of a numerical control in a machine tool, said system program being for the internal control of the command cycle and being permanently stored in a plurality of system semiconductor memories, comprising: an additional semiconductor memory in which a word sum of the information permanently stored in each of said system semiconductor memories is individually stored for each system semiconductor memory; means for taking new word sums of each system semiconductor memory; means for comparing each new word sum with the corresponding sum stored in the said additional memory; and display means for indicating which memory is defective, in the event there is a difference between said new sum and the corresponding stored sum in said additional memory.



4,354,252
PROGRAMMABLE DIGITAL DATA TERMINAL FOR MOBILE RADIO TRANSCEIVERS

James A. Lamb, Hoffman Estates; Johnny E. Blankenship, Schaumburg; George E. Dykas, Vernon Hills; William Milleker, Chicago, and Kenneth W. Hamilton, Rolling Meadows, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 837,255, Sep. 27, 1977, abandoned. This application Feb. 2, 1981, Ser. No. 230,828
Int. Cl.³ G06F 15/40
U.S. Cl. 364—900 **17 Claims**



1. A radio frequency digital data transmission system for communicating digital messages between a base station and a plurality of mobile stations, where the mobile stations each include a radio transceiver and a programmable data terminal coupled thereto for receiving and transmitting digital messages, wherein the programmable data terminal of each mobile station comprises:

means for generating a data clock signal;

means coupled to the radio transceiver for receiving in response to the data clock signal, successive bits of digital messages transmitted from the base station;

keyboard means including a transmit key and a plurality of alphanumeric keys;

display means including a plurality of display elements for visually displaying digital messages applied thereto;

means coupled to the radio transceiver for transmitting in response to the data clock signal, successive bits of digital messages applied thereto; and

processing means including a compose memory, a next message memory, a read-only memory for storing a control

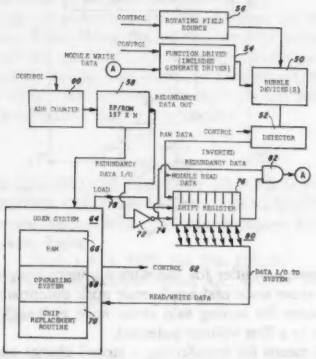
program and peripheral-interface-adapter means for interfacing the processing means to the data clock signal generating means, receiving means, keyboard means, display means and transmitting means; the processing means receiving a digital message entered from the keyboard means, storing the entered digital message in the compose memory, and applying the entered digital message to the display means; and the processing means further having an interrupt input coupled to the clock signal and being responsive to each predetermined logical state change of the clock signal for, under control of the control program, storing in the next message memory successive bits of a digital message received by the receiving means, and, when the transmit key is activated, applying successive bits of a digital message stored in the compose memory of the transmitting means.

4,354,253

BUBBLE REDUNDANCY MAP STORAGE USING NON-VOLATILE SEMICONDUCTOR MEMORY

Rex A. Naden, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1976, Ser. No. 752,947
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—15 **15 Claims**



9. A magnetic domain memory system comprising:

a thin magnetic film capable of supporting magnetic domains;

means defining a major path on said magnetic film on which magnetic domains may be propagated;

a plurality of minor storage loops in each of which magnetic domains may be propagated and disposed on said magnetic film adjacent to said major propagation path, one or more of said minor storage loops being inoperable;

means for transferring said magnetic domains between said major propagation path and said minor storage loops;

means on said film for storing information as to the locations of inoperable minor storage loops thereon;

control means operably associated with said film to impart movement to said magnetic domains in said film for propagating said magnetic domains along said major path and said minor storage loops in a data processing operation;

an erasable non-volatile memory element operably associated with said information storing means for recording the locations of said one or more inoperable minor storage loops, and said erasable non-volatile memory element being electrically coupled to said control means for providing signals thereto effective to inhibit the use of any inoperable minor storage loops on said film; and

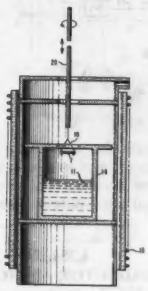
further including a volatile random access memory element for storing and updating locations of said inoperable minor storage loops.

4,354,254

DEVICES DEPENDING ON GARNET MATERIALS

Stuart L. Blank; Ernst M. Gyorgy, both of Madison; Roy C. LeCraw, Westfield, and Lars C. Luther, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 7, 1980, Ser. No. 204,899
Int. Cl.³ H01F *1/37*
U.S. Cl. 365—33 **10 Claims**



1. A device comprising (1) an epitaxial layer of garnet material having a uniaxial magnetic anisotropy of magnitude greater than 7000 ergs/cm³ which due to a growth-induced component is capable of supporting a single wall magnetic domain (2) means for producing and means for maintaining in said garnet said single wall magnetic domain (3) means for propagating said single wall domain in said garnet and (4) means for detecting the presence of said single wall magnetic domain, such that said garnet material comprises a composition nominally represented by the formula $\{A\}_3[B]_2(C)_3O_{12}$, wherein said composition includes sufficient iron ions to produce a magnetic moment in said garnet characterized in that B also includes a magnetic anisotropy producing member of the group consisting of Co^{2+} and an ion having 5d or 4d electrons wherein the number of said electrons is 1, 2, 4 or 5, and A includes a typical combination capable of producing a magnetic anisotropy, said typical combination represented by A being $X_{3-y}Z_y$ where X is the magnetic rare earth ion of highest mole fraction in A, Z is the remaining composition of A, and $0.1<y<2.9$, said anisotrpoy producing member in B producing a uniaxial magnetic anisotropy which is complementary to the uniaxial magnetic anisotropy produced by said typical combination in A.

4,354,255

RANDOM ACCESS MEMORY WITH VOLATILE AND NON-VOLATILE STORAGE

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1980, Ser. No. 144,922
Int. Cl.³ G11C *11/40, 9/00*
U.S. Cl. 365—154 **7 Claims**

1. The combination comprising:

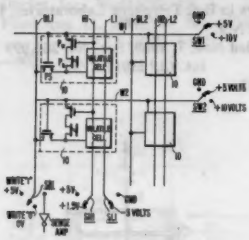
a volatile binary storage element having first and second power terminals for the application of an operating potential therebetween and having first and second input output (I/O) points;

a bit line, and a word line;

a gating transistor having a conduction path and a control electrode; means connecting said conduction path of said gating transistor between one of said I/O points and said bit line; and means connecting said control electrode to said word line;

a non-volatile storage element which can be programmed to either one of two conductive states; and

a switch means, coupled to said non-volatile storage element, responsive to a given potential difference applied between said word line and one of said first and second



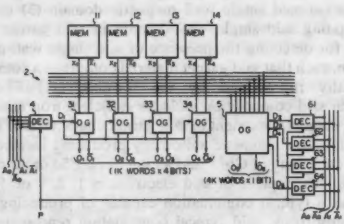
power terminals for selectively connecting said non-volatile storage element in circuit with said volatile binary storage element between said word line and one of said first and second input-output points.

4,354,256

SEMICONDUCTOR MEMORY DEVICE

Kiyoshi Miyasaka, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 30, 1980, Ser. No. 145,346
Claims priority, application Japan, May 4, 1979, 54/54915
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **10 Claims**



1. A semiconductor memory device comprising:

N memory cell arrays, each of said arrays including a plurality of memory cells,

a plurality of address lines for selectively addressing individual memory cells of said arrays,

a group of output gates of a first kind respectively corresponding to said memory cell arrays and operable when selectively enabled for simultaneously producing in parallel a corresponding plurality of 1-bit output signals selected from said respective N memory cell arrays by said address lines,

a gate of a second kind common to all of said memory cell arrays and operable when selectively enabled for producing a particular 1-bit output signal selected from said N memory cell arrays by said address lines,

a first decoder circuit for simultaneously enabling said output gates of said first kind,

N other decoder circuits for enabling said gate of said second kind,

a power supply terminal and a ground terminal,

means for selectively applying relatively higher and lower potentials to said power supply terminal,

said first decoder circuit and said N other decoder circuits respectively including means connected to said power supply terminal and responsive to said relatively higher and lower potentials thereof, selectively, for enabling said group of output gates of said first kind and disabling said gate of said second kind, and for disabling said output gates of said first kind and enabling said output gate of said second kind,

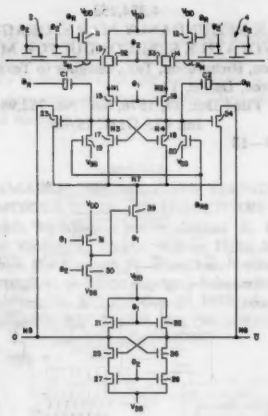
said N memory cell arrays, said output gates of said first and said second kinds, said first decoder circuit, said N other decoder circuits, and said selective potential applying means being formed on a common semiconductor substrate.

4,354,257

SENSE AMPLIFIER FOR CCD MEMORY

Ramesh C. Varshney, and Kalyanasundaram Venkateswaran, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 23, 1980, Ser. No. 152,638
Int. Cl.³ G11C *13/00, 7/00*
U.S. Cl. 365—219 **10 Claims**



1. A sense amplifier for use with a charge coupled device having a sense node and a reference node comprising

first means for setting said sense node and said reference node to a first voltage potential,

second means for transferring a stored charge and a reference charge potential to said sense node and said reference node, respectively,

differential voltage comparator means including cross-coupled transistors responsive to voltage on said node and said reference node whereby one of said transistors is rendered more conductive than the other of said transistors,

first and second output voltage terminals,

means for charging said output terminals,

discharge means operably connected with said first and second output terminals and responsive to the conduction of said cross coupled transistors for selectively discharging one of said output terminals, and

capacitive means coupled directly to said cross-coupled transistors and said discharge means for enhancing the selective discharge of one of said output terminals.

4,354,258

MEMORY BOARD AUTOMATICALLY ASSIGNED ITS ADDRESS RANGE BY ITS POSITION

Fumitaka Sato, Ome, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 11, 1980, Ser. No. 120,469
Claims priority, application Japan, Feb. 16, 1979, 54-16015
Int. Cl.³ G11C *8/00*
U.S. Cl. 365—230 **12 Claims**

1. A memory board in which a plurality of memory locations

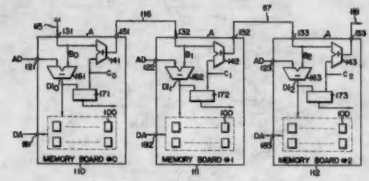
are arranged thereon by mounting a plurality of memory chips, comprising:

(A) first terminals for receiving address information for specifying one of said memory locations;

(B) second terminals for receiving start address information corresponding to the first memory location of those memory locations;

(C) means for supplying memory capacity information representing a capacity of the plurality of memory locations;

(D) addition means for adding the start address information to the memory capacity information;



(E) third terminals through which the output information of said addition means is outputted;

(F) subtraction means for subtracting the start address information from the address information; and

(G) means for producing a selection signal for selecting a memory board when the information (the address information—the start address information) outputted from the subtraction means is given by the following expression:

$0 \leqq$(the address information—the start address information)$<$the memory capacity information.

4,354,259

SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED COLUMN SELECTION STRUCTURE

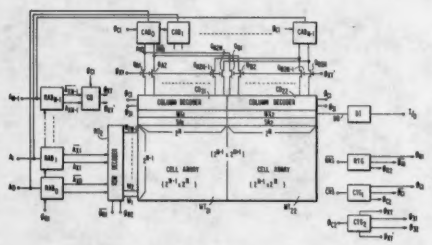
Shoji Ishimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,182

Claims priority, application Japan, Apr. 4, 1979, 54-40674

Int. Cl.³ G11C *8/00*

U.S. Cl. 365—230 **8 Claims**



4. A memory circuit comprising a first memory cell array; a second memory cell array, each of said arrays including a plurality of memory cells arrayed in rows and columns; means for electrically connecting rows of said first memory cell array to rows of said second memory cell array; means for receiving a plurality of address signals; first column selecting means for selecting columns of said first memory cell array; second column selecting means for selecting columns of said second memory cell array independently of said first column selecting means; a first column address signal transfer means coupled to said first column selecting means; a second column address signal transfer means coupled to said second column selecting means; means for supplying column address signals to said first and second column address signal transfer means; and means for activating a selected one of said first and second column address signal transfer means.

4,354,260

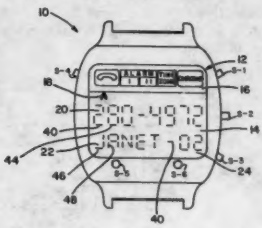
PERSONAL DATA BANK SYSTEM

Carmine S. Planzo, 15 Av. Eugene Pittard, 1206 Geneve, Switzerland

Continuation-in-part of Ser. No. 31,408, Jul. 27, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 182,023

Int. Cl.³ G04B *47/00, 23/02;* G09F *9/30*

U.S. Cl. 368—10 **14 Claims**



1. An apparatus capable of generating, storing and recalling data in the form of an array of alphanumeric characters, comprising:

display means capable of displaying said data in an array of alphanumeric characters in a plurality of distinct positions;

storage means connected to said display means for storing the data therein;

first and second switch means;

set control logic means, said set control logic means being connected to said display means and said first and second switch means, said set control logic means capable of generating a fixed sequence of data signals, each data signal corresponding to an alphanumeric character, such that upon initially actuating said first switch means said set control logic means continuously generates said sequence of data signals, with the characters corresponding to said data signals being displayed in a first position of said display means, and such that upon reactuation of said first switch means (1) the most recently displayed character is retained in said first position on said display means, and (2) said sequence of characters is then displayed in a second position on said display means, and with the subsequent repeated actuation of said first switch means resulting in a desired array of characters being selected and retained in said remaining distinct positions of said display means, after which said second switch may be actuated storing said desired array in said storage means; and

recall means connected to said set control logic means for retrieving said desired array from said storage means and displaying said array on said display means.

4,354,261

CIRCUIT ARRANGEMENT AND METHOD FOR MULTI-ADDRESS SWITCHING OPERATIONS

Rolf Hagen, Unterhaching; Diethard Linck, Munich, and Joerg Pappenberger, Rosenheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 129,396

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912825

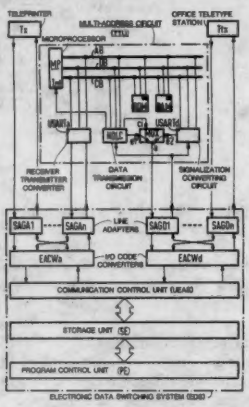
Int. Cl.³ H04J *3/16;* H04L *5/22*

U.S. Cl. 370—42 **11 Claims**

1. A circuit arrangement for multi-address switching operations of a message composed of digital encoded signals between a calling data terminal and a variety of called data termi-

nals operating with different data transmission procedures including signalling, data format and data transmission rate, said circuit arrangement adapted for use with an electronic data switching system and comprising in combination:

(a) at least two interface circuits each having an external interface input, an external interface output, an internal interface input, an internal interface output and an interface control terminal, and each having input/output converting networks connected to said interface inputs and outputs, each of said external interface inputs being adapted for connection with respective output means of the electronic data switching system for receiving digital signals from one type of data terminal and each of said external interface outputs being adapted for connection with respective input means of the electronic data switching system for transmitting digital signals to said type of data terminal;



(b) storage means for storing the message being sent from the calling data terminal and including data information to be transmitted and identification information of the called data terminals, said storage means having a storage input, a storage output and a storage control terminal, said internal interface input and said storage input being connected in parallel to said storage output and said internal interface output respectively; and

(c) control means for controlling the input/output operations of said storage means such that said data information is sent out in sequence to each of the called data terminals one after another by means of a separate line connection across the respective interface circuit assigned to the currently called type of data terminal and with a data transmission procedure associated with the currently called type of data terminal.

4,354,262

LOGIC SYSTEM FOR CONTROLLING A MODULAR MULTIPLEX CONNECTION UNIT IN A TIME-DIVISION SWITCHING EXCHANGE

Jean Guezou, Lannion; Bernard LeDieu, Perros Guirec, and Jean-Pierre Martin, Pleumeur Bodou, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

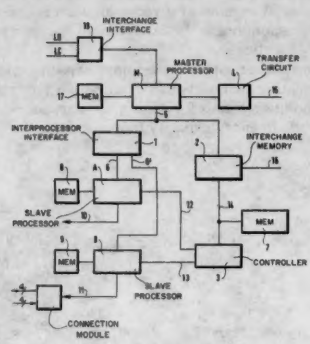
Filed May 5, 1980, Ser. No. 146,853

Claims priority, application France, May 4, 1979, 79 11321

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **6 Claims**

1. A logic system for controlling a modular multiplex connection unit including a plurality of connection modules in a time-division exchange, the logic system comprising at least one subsystem including a master processor (M), two slave processors (A, B) each controlling half the connection modules and each connected to a separate memory (8, 9), an interchange memory (2) connected to a common memory (7) and to the slave processors via a bus interface controller (3) and to the



master processor, an interprocessor interface (1) connected to the master processor and to each slave processor, and an interchange interface (18) connected to the master processor and to markers and a monitoring unit of a switching centre.

4,354,263

COMPUTER-COMMUNICATIONS CONCENTRATOR FOR TRANSMISSION AND SWITCHING OF PACKETIZED DATA

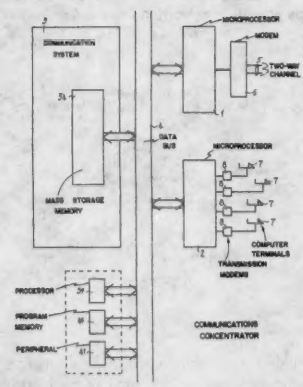
Herve Bordry, 15, rue Jean Richepin; Herve Layec, 50 rue Papu, both of 35000 Rennes, and Jean-Claude L'Hostis, L'Erable, 35230 Saint-Herblon, all of France

Filed Jun. 11, 1980, Ser. No. 158,568

Claims priority, application France, Jun. 13, 1979, 79 15742

Int. Cl.³ H04J *3/00*; H04Q *11/04*

U.S. Cl. 370—94 **3 Claims**



1. A computer-communications concentrator for establishing connections between a multiplicity of asynchronous computer-communications terminals and a two-way computer-communication channel from a data packet switching and transmission network, comprised of one processing unit means operating asynchronously and being connected to the computer-communication terminals, one X25 normalized function processing unit means connected to the two-way computer-communication channel, said concentrator being characterized in that between the two processing units means, a communication system comprised of one memory unit means having a first

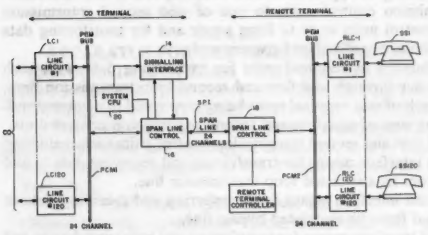
part for storing each packet transmitted in one or the other direction, a second part comprised of forward and return cell pairs, each cell being provided with means to store a packet header during a transfer into the communication system, each local header containing the address of the packet stored in the first part of the memory unit means, its length, and the type of packet stored there, the interpretation of the stored packet being used to determine in the processing unit which reads it, the appropriate processing to be done for the packet at hand, each link between a terminal and the two-way channel making use of a set of selected pairs of cells, each packet being stored in a location which is available from the first part of the processing unit which introduces this packet into the memory, inserting a local header in the corresponding outgoing cell from the associated cell pair, and transferring this header into the return cell of the other pair from the set associated with the unit which will output the packet from the memory unit when this cell is available, as indicated by the packet information.

4,354,264

DIGITAL RING CONTROL SYSTEM FOR DIGITAL MULTIPLEXER

Walter K. Wurst, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,736
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—110 **7 Claims**



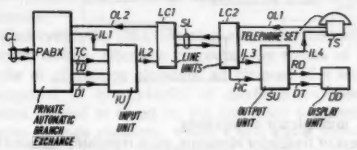
1. A ringing control system for use on a subscriber digital multiplex network for intercommunication of ringing signals of any of a plurality of types from an exchange over a multiple channel digital span line to a line to be rung at a remote terminal, comprising a line circuit for each line at said exchange, means in each line circuit for producing binary signals in response to alternating current ringing signals received from the exchange, means in each line circuit for temporarily storing binary signals produced, means in each line circuit for transmitting stored binary signals as digital words representative of ringing signals over a time division channel allocated to the line of the respective line circuit, a signaling interface common to plural lines of said exchange, said interface receptive of digital words from the line circuits for verifying received words as representative of actual ringing signals and recoding the words for transmission over a multiple channel span line to the remote terminal, a line circuit in said remote terminal individual to each of the lines, and means in each of said terminal line circuits for receiving recoded words from the span line, and means in each terminal line circuit for decoding words directed to that terminal line circuit from the span line for causing the generation of ringing signals consistent with the type of signal received from the exchange.

4,354,265

METHOD AND AN APPARATUS FOR TRANSFERRING DIGITAL INFORMATION IN A TELEPHONE SYSTEM

Karl F. L. Nyberg, and Kjell S. Josefsson, both of Tyresö, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE78/00098, § 371 Date Aug. 22, 1979, § 102(e) Date Jul. 31, 1979, PCT Pub. No. WO79/00422, PCT Pub. Date Jul. 12, 1979
PCT Filed Dec. 19, 1978, Ser. No. 154,417
Claims priority, application Sweden, Dec. 22, 1977, 7714644
Int. Cl.³ H04J *3/12*; H04M *11/06*
U.S. Cl. 370—111 **5 Claims**

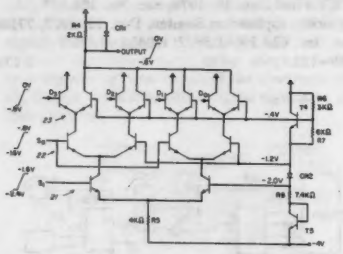


1. In a telephone system of the type wherein the amplitude values of speech signals are transmitted in digital form, apparatus for transmitting additional digital information without disturbing a speech communication in progress comprising: at the sending side, an input means having a first input for receiving the digital speech signals, a second input for receiving the additional digital information and an output for delivering the digital speech signals interleaved with the additional digital information; at the receiving side, an output means having an input for receiving the digital speech signals interleaved with the additional digital information, a first output for delivering the digital speech signals as well as replacement signals instead of the interleaved additional digital information, said replacement signals in principle reproducing that amplitude value which was transmitted immediately prior to the additional digital information, and a second output for delivering the additional digital information; said input means comprising a first control means for, in dependence on the fact that the additional digital information is available on said second input, generating a first control signal having a duration corresponding to the transmission time for the additional digital information, a first data register means for storing the additional digital information, and a first gating means for, in the absence of said first control signal, forwarding the digital speech signals from said first input to said output and, in the presence of said first control signal, instead feeding the additional information from said first data register; and said output means comprising a second data register for successive intermediate storing of digital speech signals arriving at said input being interleaved with said additional information, said register being connected to said other output, a second control means for generating, in dependence on the fact that there is the additional digital information in said second data register, a second control signal having a duration corresponding to the transmission time for the additional digital information, a signal generator means for generating the replacement signals, and a second gating means for forwarding, in the absence of said control signal, the successive intermediate stored digital speech signals from said other data register to said first output and for feeding, in the presence of said other control signal, the replacement signals from said signal generator means to said first output at the same time as the additional digital information is fed from said second data register to said other output.

4,354,266
MULTIPLEXOR WITH DECODING

Michael Cooperman, Framingham, Mass., and Christopher W. Kapral, San Carlos, Calif., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 31, 1979, Ser. No. 90,159
Int. Cl.³ H04J 3/02
U.S. Cl. 370—112 8 Claims



1. A multiplexor comprising

three sets of transistor elements, each transistor element having three electrodes;

the first of said sets including a pair of transistor elements having their first electrodes connected together, the second electrode of one of the transistor elements of the pair being connected to a first point of fixed potential, and the second electrode of the other of the transistor elements of the pair being connected to a first select input terminal;

the second of said sets including two pairs of transistor elements, the first electrodes of the transistor elements of the first pair being connected together and to the third electrode of the one transistor element of the first set, the first electrodes of the transistor elements of the second pair being connected together and to the third electrode of the other transistor element of the first set, the second electrodes of one of the transistor elements of each of the two pairs being connected together and to a second point of fixed potential, and the second electrodes of the other of the transistor elements of each of the two pairs being connected together and to a second select input terminal;

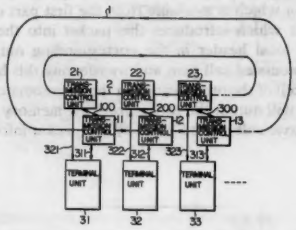
the third of said sets including four pairs of transistor elements, the first electrodes of the transistor elements of the first pair being connected together and to the third electrode of the one transistor element of the first pair of the second set, the first electrodes of the transistor elements of the second pair being connected together and to the third electrode of the other transistor element of the first pair of the second set, the first electrodes of the transistor elements of the third pair being connected together and to the third electrode of the one transistor element of the second pair of the second set, the first electrodes of the transistor elements of the fourth pair being connected together and to the third electrode of the other transistor element of the second pair of the second set, the second electrodes of one of the transistor elements of each of the four pairs being connected together and to a third point of fixed potential, the second electrodes of the other transistor elements of each of the four pairs being individually connected to separate data input terminals, the third electrodes of the one transistor elements of the four pairs being connected together to an output terminal and through a resistance and a diode in parallel to a first source of reference potential, the third electrodes of the other transistor elements of the four pairs being connected directly to said first source of reference potential; and

a resistance connected directly to the first electrodes of the pair of transistor elements of the first set and directly to a second source of reference potential.

4,354,267
DATA TRANSMISSION SYSTEM UTILIZING LOOP TRANSMISSION LINES BETWEEN TERMINAL UNITS

Kinji Mori, Sagamihara; Hirokazu Ihara, and Makoto Nohmi, both of Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,632
Claims priority, application Japan, Sep. 10, 1979, 54-115300
Int. Cl.³ G06F 11/20; H04J 3/14
U.S. Cl. 371—11 8 Claims



1. A data transmission system comprising:

a first loop transmission line for transferring data in a first direction;

a second loop transmission line for transferring data in a second direction which is opposite to said first direction;

a plurality of first transmission control units connected in said first loop transmission line;

a plurality of second transmission control units connected in said second loop transmission line;

a plurality of bypass lines each coupling one of said first transmission control units to one of said second transmission control units so as to form a pair and for transferring data bidirectionally therebetween; and

a plurality of terminal units for exchanging data with each other through said first and second loop transmission lines, each of said terminal units being connected to a corresponding pair of said first and second transmission control units,

said first and second transmission control units each including:

first interface means for transferring and receiving data to and from its associated loop transmission line,

second interface means for transferring and receiving data to and from its associated bypass line,

third interface means for transferring and receiving data to and from its associated terminal unit, and

data processing means for receiving data from said first, second and third interface means and for selectively sending out the received data to said first, second and third interface means.

4,354,268
INTELLIGENT TEST HEAD FOR AUTOMATIC TEST SYSTEM

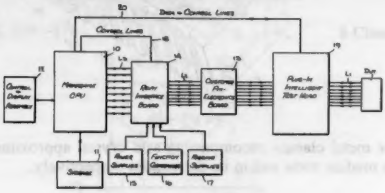
Thomas J. Michel, Hialeah, and Richard H. Finger, Hollywood, both of Fla., assignors to Santek, Inc., Hollywood, Fla.

Filed Apr. 3, 1980, Ser. No. 136,929
Int. Cl.³ G01R 15/12; G06F 11/22
U.S. Cl. 371—20 4 Claims

1. In combination with a computer-controlled test system for carrying out certain standard tests on integrated circuits and other micro-electronic devices, said computer-controlled test system being provided with a main frame computer having a predetermined operative language and a pin electronics board for linking a device under test to the computer through a relay interface which acts to couple selected testing sources to the device which are appropriate to the normal test capabilities of the computer-controlled test system; an intelligent test head which is adapted to be plugged into the computer-controlled test system to render it capable of executing special tests which the system cannot otherwise perform; said test head, when

plugged in, being interposed between the device under test and the pin electronics board of the computer-controlled test system, said test head comprising:

(A) a microprocessor under the control of said main frame computer and a translator through which the output data of said microprocessor is fed into said main frame computer whereby the output data entered into the computer is translated into said operative language to enable evaluation of this data by the computer for processing therein;



(B) firmware connected to said microprocessor and provided with a memory having stored therein test functions, timing and sequencing instructions appropriate to said special tests;

(C) a group of separate testing sources for carrying out said special tests; and

(D) switching means controlled by said microprocessor in accordance with the instruction supplied by said firmware to connect sources selected from said group to said device under test to carry out said special tests, and means to supply the output of said device resulting from the special tests in digital terms to the input of the microprocessor.

4,354,269

APPARATUS FOR THE PROCESSING OF AN INFORMATION STREAM WITH THE AID OF AN ERROR-CORRECTING CONVOLUTIONAL CODE AND APPARATUS FOR THE DETECTION OF AN ERROR STILL IRREMEDIABLE IN THIS PROCESSING

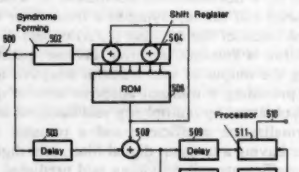
Lodewijk B. Vries, and Matthijs A. Diepeveen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,050

Claims priority, application Netherlands, Sep. 26, 1979, 7907141

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—43 **6 Claims**



1. Apparatus for the reception of a stream of binary code elements which form a sequence of n-tuples of an (n, k, p, u) error-correcting convolutional code, wherein k/n is the coding efficiency, p is the encoding constraint length, and u>p is the decoding constraint length, which apparatus comprises:

first-syndrome forming means (220, 222, 224, 226) for forming a sequence of (n−k)-tuples of syndrome elements in synchronism with the reception of n-tuples of code elements;

a logic unit (250) having first storage means (228–241) for storing a progressing sequence of u (n−k)-tuples of syndrome elements, and for forming, in synchronism with the reception of the n-tuples of code elements, a further sequence of j-tuples of correction elements (f1) at a first output, wherein j=k for a systematic code and j=n for a non-systematic code;

a correction apparatus (250) having second storage means (206–218) for storing at least the information containing part of the sequence of n-tuples of code elements during a time corresponding to at least u bit cells and for bitwise adding this thereafter modulo-2 to the corresponding j-tuple of correction elements;

a feedback connection (242–248) for supplying said sequence of j-tuples of correction elements to said logic unit for updating the (n−k)-tuples of syndrome elements stored therein so as to compensate these for the effects of the correction executed on said sequence of n-tuples of code elements;

modified-syndrome (252) forming means for forming at a second output, after the correction by means of said j-tuple of correction elements, an element of a sequence composed of (n−k)-tuples of modified-syndrome elements formed as based on the corrected sequence of n-tuples of code elements, where a first signal value of an (n−k)-tuple of modified syndrome elements indicates that a correct correction can have taken place, but all other values thereof that no correct connection can have taken place;

signalling means (254–264) connected to said second output for, upon receiving a predetermined amount of said other values, generating an unreliability signal;

characterized in that said first storage means constitute an address register to a read-only memory (250) having a plurality of separately addressable word locations and being contained in said logic unit, in that said modified-syndrome forming means comprise at least part of said read-only means co-addressable by outputs from said first storage means, and in that said signalling means comprise third storage means for storing a further sequence of said modified-syndrome (n−k)-tuples, and OR-ing means (264) for OR-ing a predetermined number of said other signal values for thereby producing said unreliability signal.

4,354,270

SELF-MONITORING SYSTEM FOR SUPERVISING CONGRUENCE BETWEEN CONTROL SIGNALS

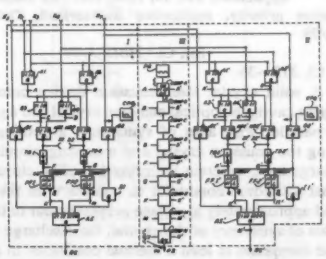
Alfred Nuding, Aalen, Fed. Rep. of Germany, assignor to Herion-Werke KG, Fellbach, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,894

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854779

Int. Cl.³ G06F *11/16*

U.S. Cl. 371—68 **8 Claims**



1. A self-monitoring system for supervising congruence

between and non-congruence between at least two control signals, comprising:

a plurality of identical logic networks connected in parallel with each other and operating independently of each other, the networks each having

a plurality of inputs equal in number to the number of signals between which congruence is to be monitored,

a single final output, and

intermediate outputs; and

a malfunction monitor connected to all outputs of all networks and comparing each output of each network to all corresponding outputs of all other networks in a manner that like intermediate outputs are only compared with each other and final outputs are compared only with each other, the malfunction monitor operating in a manner that when all like outputs are in like states, the monitor indicates such likeness, and otherwise indicates any lack of likeness and additionally indicates all outputs where such lack of likeness exists.

4,354,271

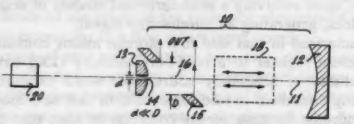
FREQUENCY-CONTROLLED, UNSTABLE OPTICAL RESONATOR

John F. Hon, Tarzana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 28, 1980, Ser. No. 176,330

Int. Cl.³ H01S 3/08

U.S. Cl. 372—19 **10 Claims**



1. In an unstable optical resonator, having a concave reflector, a convex reflector facing the concave reflector on a common axis, and a scraper mirror, having an aperture and being traversed by the axis, the improvement of frequency-selective means located outside the optical cavity defined by said reflectors and serving to reflect only radiation of preselected frequency in beams directly on or very nearly on the axis and having an effective aperture significantly smaller than the aperture of the scraper mirror.

4,354,272

SOLID CRYSTAL LASER EMISSION DEVICE WITH AN IMPROVED EXTERNAL COOLING CIRCUIT

Hans-Peter Schwob, Uetendorf, and Peter Soppelsa, Thierachern, both of Switzerland, assignors to Lasag S.A., Switzerland

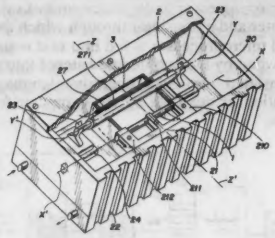
Continuation-in-part of Ser. No. 91,399, Nov. 6, 1979. This application Jul. 14, 1980, Ser. No. 168,497

Claims priority, application Switzerland, Oct. 31, 1979, 9757/79

Int. Cl.³ H01S 3/04

U.S. Cl. 372—36 **6 Claims**

1. A solid crystal laser emission device comprising in a pumping cavity, an optical emission crystal and a gas discharge tube parallel with axes of symmetry, a cooling circuit for cooling the emission crystal and a cooling circuit for the gas discharge tube, wherein the crystal cooling circuit comprises at least a thermal conductor in contact with the crystal and placed approximately in a plane perpendicular to the longitudinal axis of symmetry of the crystal, the discharge tube cooling circuit comprises at least a thermal conductor in contact with the body of said discharge tube, each thermal conductor further being in contact with at least a dissipating wall of said pumping cavity, said crystal cooling circuit substantially comprising a set of three metal clamps having a longitudinal axis of symmetry perpendicular to the longitudinal axis of the crystal,



the metal clamps encompassing said crystal approximately in its median zone and in its extremities respectively.

4,354,273

ADPCM SYSTEM FOR SPEECH OR LIKE SIGNALS

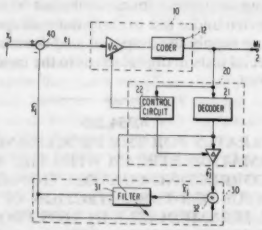
Takashi Araseki, and Kazunori Ozawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 156,990

Claims priority, application Japan, Jun. 12, 1979, 54-74122; Jun. 12, 1979, 54-74123

Int. Cl.³ H04B 15/00

U.S. Cl. 375—27 **9 Claims**



1. An ADPCM system for speech or like signals comprising:

an ADPCM transmitter including a subtractor for receiving an input signal X_j and predicted value and producing an output e_j corresponding to the difference therebetween; a transmit adaptive quantizer for dividing the subtractor output e_j by a normalization coefficient Δ which adaptively varies and for supplying as a transmitter output a quantized result of the quotient (e_j/Δ) of said division in coded form; a transmit adaptive inverse quantizer for decoding the output of said transmit adaptive quantizer and for providing a transmit adaptive inverse quantizer output $\hat{e}_j$ obtained by multiplying said decoded output by said normalization coefficient; and a transmit adaptive predictor having a transmit digital filter, said digital filter having coefficients and providing said predicted value in accordance with said filter coefficients and in response to the output of said transmit adaptive inverse quantizer, the coefficients of said digital filter being corrected in accordance with a filter control signal dependent upon said decoded output; and

an ADPCM receiver including a receive adaptive inverse quantizer for providing a second decoded output obtained by decoding the output of said transmitter and for providing a receive inverse quantizer output obtained by multiplying said second decoded output by said adaptively varying normalization coefficient; and a receive adaptive predictor having a receive digital filter, said receive digital filter having filter coefficients and providing a pre-

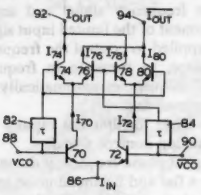
dicted value in response to said receive inverse quantizer output, the coefficients of said receive digital filter being corrected in accordance with a control signal dependent upon said second decoded output.

4,354,274

DIGITAL SIGNAL TRANSMISSION SYSTEM

John B. Hughes, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,508
Int. Cl.³ H03D 3/24
U.S. Cl. 375—120 **6 Claims**



1. A phase-locked-loop clock extractor for extracting a clock frequency of N/2 cycles per second from a transmitted pulse-code-modulated (PCM) data signal of N bits per second, the clock extractor comprising a voltage controlled oscillator (VCO) for generating a clock signal of the desired frequency, a circuit connected to receive the transmitted data signal and produce a pulse signal on each transition of the data signal from one logic level to another and vice versa, a phase detector for comparing the VCO output with the pulse signal produced by said circuit and means connected to the phase detector for producing a control signal which is used for adjusting the frequency generated by the VCO, the phase detector comprising a first switching circuit operable on each half cycle of the VCO frequency to route said pulse signal to second and third switching circuits, each of the second and third switching circuits having first and second outputs, means for delaying the VCO output, each of the second and third switching circuits being operable on each half cycle of the VCO frequency which has been delayed by a predetermined amount compared with the VCO frequency applied to the first switching circuit by said means for delaying the VCO output to produce pulse trains on their first and second outputs, the pulses in each pulse train comprising complementary parts of the corresponding pulses routed to the second and third switching circuits by the first switching circuit, means for combining corresponding first parts of the pulses appearing on the first output of the second and third switching circuits to form a first output signal (IOUT) and means for combining corresponding second parts of the pulses appearing on the second output of the second and third switching circuits to form a second output signal (I_{OUT}), said first and second output signals being used by said means connected to the phase detector to produce the control signal.

4,354,275

APPARATUS FOR COMMUNICATING RECEIPT OF TRANSMITTED MESSAGES

Bernard Bouyssounouse, and Chantal Bouyssounouse, both of 840 Hamilton Ave., Palo Alto, Calif. 94301

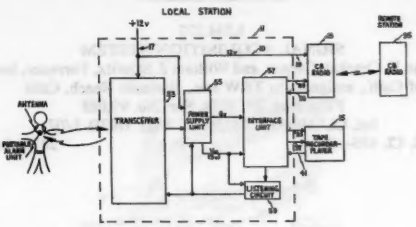
Continuation of Ser. No. 896,314, Apr. 14, 1978, Pat. No. 4,162,449. This application May 21, 1979, Ser. No. 40,639
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.
Int. Cl.³ H04B 1/00
U.S. Cl. 455—54 **7 Claims**

1. In a communication system including a portable unit capable of transmitting a signal, a player unit capable of playing a pre-recorded emergency message, and a CB radio capable of communicating with a listener at a remote CB radio station, an apparatus comprising:

receiver means for producing a signal in response to receiving a signal from the portable unit;

power supply means, coupled to the receiver means and to the CB radio, for receiving the signal produced by the receiver means, providing power, and activating the CB radio;

interface means, coupled to the power supply means, to the CB radio and to the player unit, for activating the player unit to play the emergency message and the CB radio to transmit the emergency message in response to activation by the power supply means, for deactivating the player unit to stop



playing the emergency message and the CB radio to stop transmitting the emergency message during a listening period in response to a selected signal from the player unit, and for receiving an acknowledgement signal representing a replay received by the CB radio from the listener; and

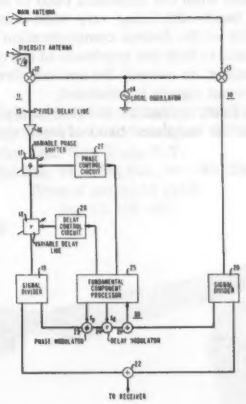
listening circuit means, coupled to the interface means and to the power supply means, for causing the interface means to deactivate the CB radio to stop transmitting the emergency message in response to receipt during the listening period by the interface means of the acknowledgement signal indicating receipt by the listener of the transmitted emergency message.

4,354,276

EQUALIZING SIGNAL COMBINER

Peter D. Karabinis, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1980, Ser. No. 190,353
Int. Cl.³ H04B 7/08
U.S. Cl. 455—139 **5 Claims**



1. An equalizing signal combiner comprising:

first and second signal paths (10, 11);

signal combining means (21, 22) coupled (19, 20) to said two wavepaths (10, 11) for combining the signals therein;

means (23) for phase modulating the signal in one of said signal paths to produce a fundamental component of amplitude variation in the combined signal;

signal processing means (25) for sensing said fundamental signal components in two selected portions (Δ_1, Δ_2) of the frequency spectrum of said combined signal;

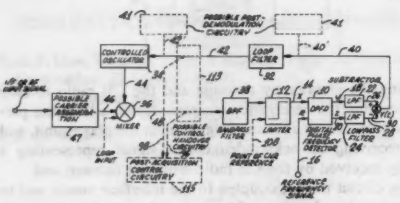
and means (17) for varying the relative phase of the signals in said two wavepaths in response to the fundamental component of the weaker of said two signal components so as to minimize the amplitude dispersion of the combined signal within said frequency spectrum.

4,354,277

SIGNAL ACQUISITION SYSTEM

John E. Crackel, Carson, and William J. Stieritz, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 23, 1979, Ser. No. 97,088
Int. Cl.³ H04B 1/26; H03L 7/00; H03D 3/02
U.S. Cl. 455—259 **22 Claims**



1. A signal acquisition system for tuning to a desired communication signal, the exact frequency of which is unknown, in a noisy environment, said system comprising:

signal input means, for receiving a wide band of input signals, including possible signal and noise components at various frequencies in the band;

mixing means, for translating in a frequency all of the components of the band of input signals through a controllable frequency difference, to produce a translated band of input signals;

controlled oscillator means, for supplying a frequency-controlled signal to said mixing means to translate the band of input signals;

bandpass filter means to obtain a selected bandwidth of frequencies from the translated band of input signals, the selected bandwidth being very wide compared with the bandwidth of the desired communication signal;

limiter means, to limit the amplitude of the controlled signal to said mixer, to control the amount through which the band of input signals is translated;

a bandpass filter, to obtain a selected bandwidth of frequencies from the translated band of input signals for further processing, the selected bandwidth being very wide compared with the bandwidth of the desired carrier signal;

a limiter, for limiting the amplitude of the translated and selected band of input signals to a relatively small value;

a digital phase-frequency detector having one input supplied by the limited input signals, and another provided by a reference frequency signal, and providing two output signals, of which only one is active at any time, to indicate the higher frequency input signal or the phase difference when the frequencies are equal;

means for combining the output signals of said digital phase-frequency detector to yield a signed analog control signal indicative of the frequency of phase difference between the reference frequency signal and any dominant frequency component of the limited input signals, the control signal being applied to control the frequency of said controlled oscillator, to translate in frequency a selected bandwidth of frequencies automatically toward the desired carrier signal; and

a low-pass loop filter to filter out rapidly varying components of the analog control signal;

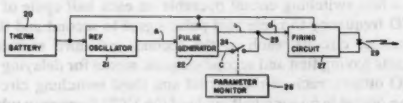
wherein said digital phase-frequency detector is practically insensitive to a flat and balanced noise spectrum and will lock onto the desired carrier signal provided the carrier signal power exceeds the out-of-balance noise power over a selected frequency band.

4,354,278

LASER TELEMETRY

Lee K. Clark, Santa Ana, and Michael C. Peron, Diamond Bar, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 10, 1980, Ser. No. 214,970
Int. Cl.³ H04B 9/00
U.S. Cl. 455—617 **10 Claims**



1. A telemetry system in a vehicle adapted to be launched, comprising:

(a) means defining an aperture in the rear of said vehicle for passage of a laser beam therethrough;

(b) laser means in said vehicle and means for projecting a beam from said laser through said aperture;

(c) means for pulsing said laser at a first frequency when said system is energized with operating power in the absence of a desired vehicle parameter condition; and

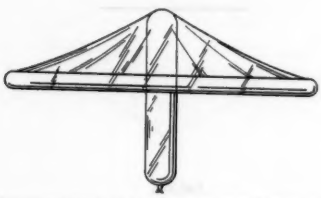
(d) means for pulsing said laser at a second frequency when said system is energized with said operating power in the presence of said parameter condition.

DESIGNS

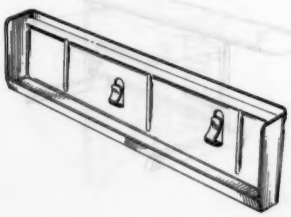
OCTOBER 12, 1982

266,455
SHOE UPPER
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Division of Ser. No. 877,359, Feb. 13, 1978. This application Apr. 28, 1980, Ser. No. 144,269
The portion of the term of this patent subsequent to Oct. 7, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—326

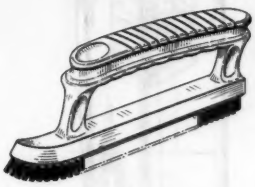
266,456
INFLATABLE UMBRELLA
Harry Strickler, Bahnweg 119, 8606 Meizen, Switzerland
Filed May 27, 1980, Ser. No. 153,196
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—5



266,457
ARTICLE CARRIER FOR TRUCK CABS
Thomas K. Johnson, Box 917, Safford, Ariz. 85546
Filed Jun. 2, 1980, Ser. No. 155,407
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D3—40

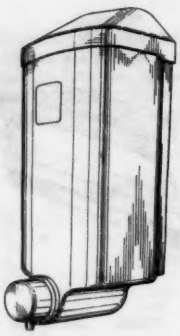


266,458
SCRUBBING BRUSH
Patricia Gonsalves, 2912 Oslo Crescent, Mississauga, Ontario, Canada
Filed Oct. 15, 1980, Ser. No. 197,125
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—03



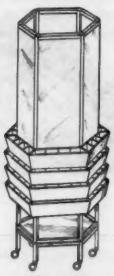
266,459
TOOTHBRUSH AND TOOTHPASTE TUBE CAP SET
Channing Cassett, New York, N.Y., assignor to Valdor International Cosmetics Ltd., New York, N.Y.
Filed Sep. 11, 1980, Ser. No. 186,724
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18

266,460
DISPENSER
Francis J. Rice, Milford, England, assignor to Appor Limited, Derby, England
Filed Mar. 31, 1981, Ser. No. 249,327
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95

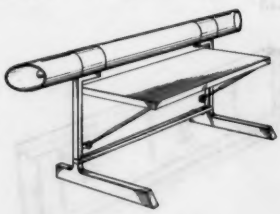


266,461
ADJUSTABLE PLATE HOLDER
James A. Helzer, Cheyenne, Wyo., assignor to Unicover Corporation, Cheyenne, Wyo.
Filed Sep. 11, 1980, Ser. No. 186,728
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—142

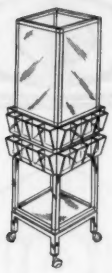
266,462
COMBINED ADVERTISING DISPLAY STAND AND BROCHURE HOLDER
Michael J. Edwards, 21 Earle St., Cremorne, New South Wales 2090, Australia
Filed Apr. 2, 1980, Ser. No. 136,606
Claims priority, application Australia, Nov. 12, 1979, 79-541
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146



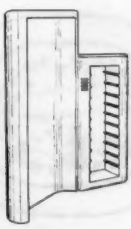
266,463
COMBINED DESK AND LAMP THEREFOR
Russell M. Scott, 13205 Barbara Ann St., #18, North Hollywood, Calif. 91605
Filed Mar. 20, 1980, Ser. No. 132,334
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—156



266,464
COMBINED ADVERTISING DISPLAY STAND AND BROCHURE HOLDER
Michael J. Edwards, 21 Earle St., Cremorne, New South Wales 2090, Australia
Filed Apr. 2, 1980, Ser. No. 136,607
Claims priority, application Australia, Oct. 23, 1979, 79-352
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—184



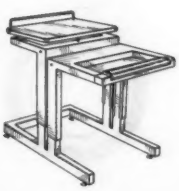
266,465
HOUSING FOR HAIRDRESSER'S MIRROR AND STORAGE SHELVES
Peter C. Cordony, and Mark H. Cordony, both of 42 George St., Parramatta, New South Wales, Australia (2150)
Filed Feb. 27, 1980, Ser. No. 125,073
Claims priority, application Australia, Sep. 3, 1979, 78,887
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



266,466
SHELF DISPLAY UNIT
Russell K. Winter, Crownsville; Nedim Savas, Wheaton; Joseph H. Snively, Bethesda, and Thomas D. Harvey, Silver Spring, all of Md., assignors to Russell William Ltd., Columbia, Md.
Filed Apr. 9, 1980, Ser. No. 138,689
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

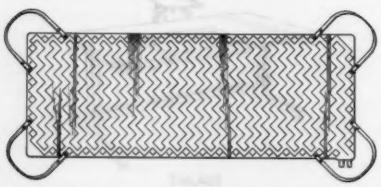
266,467
COMBINED DESK AND AUXILIARY SHELF FOR A DATA TERMINAL
Jorma Ylänkö, Kulloo, Finland, assignor to Vaasanmylly Oy, Turku, Finland
Filed Sep. 17, 1979, Ser. No. 76,276
Claims priority, application Finland, Mar. 16, 1979, 170/79
Term of patent 7 years
Int. Cl. D06—*04*
U.S. Cl. D6—188

266,468
DESK FOR A DATA TERMINAL
Jorma Ylänkö, Kulloo, Finland, assignor to Vaasanmylly Oy, Turku, Finland
Filed Sep. 17, 1979, Ser. No. 76,277
Claims priority, application Finland, Mar. 16, 1979, 172/79
Term of patent 7 years
Int. Cl. D06—*04*
U.S. Cl. D6—188



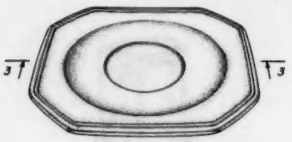
266,469
CHAIR
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Oct. 1, 1980, Ser. No. 192,749
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—191

266,470
PATIENT TREATMENT MATTRESS WITH INFLATABLE CHANNELS
Clifford E. Gammons, Indianapolis, Ind.; Kenneth L. Pagel, Manitowoc, and Barry N. Jackson, De Pere, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Jul. 22, 1980, Ser. No. 171,075
Term of patent 14 years
Int. Cl. D6—*09*; D24—*01*
U.S. Cl. D6—204

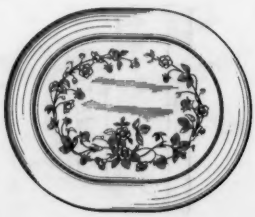


266,471
PICTURE FRAME
Donald F. Symington, 161 Union St., Almonte, Ontario, Canada (K0A 1A0)
Filed Sep. 24, 1980, Ser. No. 190,551
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235

266,472
SAUCER
Walter Everhan, Kiettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.
Filed Aug. 12, 1980, Ser. No. 177,719
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



266,473
PLATTER OR THE LIKE
Loretta H. Moskal, Glen Riddle, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 17, 1980, Ser. No. 197,921
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1

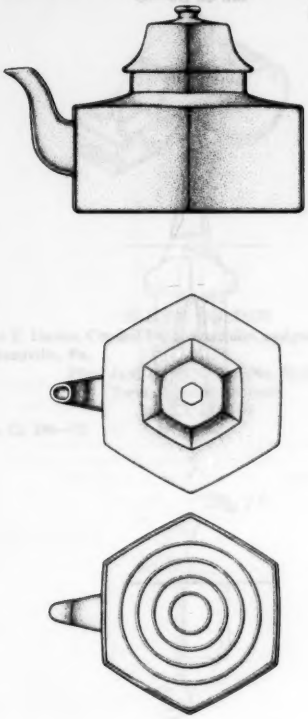


266,474

KETTLE

Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.

Filed Aug. 12, 1980, Ser. No. 177,413
Term of patent 14 years
Int. Cl. D7—*02, 01*
U.S. Cl. D7—59

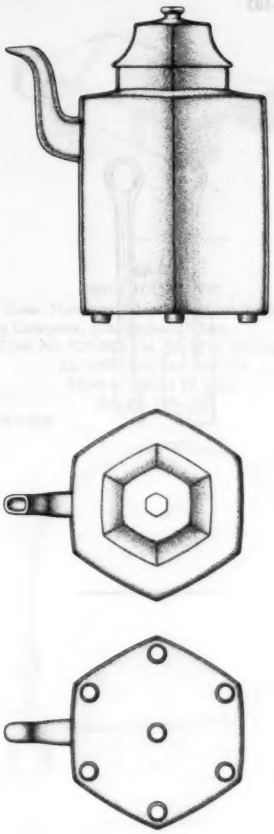


266,475

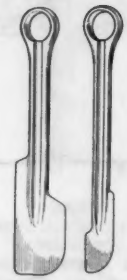
TEAPOT

Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.

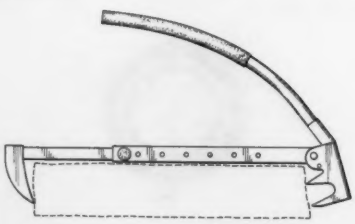
Filed Aug. 12, 1980, Ser. No. 177,416
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—59



266,476
DOUGH-SCRAPER
Harry W. Thomasson, Paarp, Sweden, assignor to Osmos Plast AB, Helsingborg, Sweden
Filed Jul. 22, 1980, Ser. No. 171,206
Claims priority, application Sweden, Jan. 23, 1980, 80-0169
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102

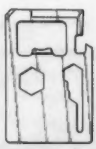


266,477
WOOD TONGS
Michael J. Raysik, Rte. 2, Warrensburg, Mo. 64093
Filed Aug. 21, 1980, Ser. No. 179,958
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—209

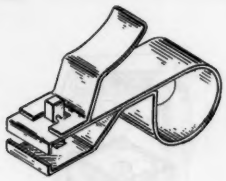


266,478
CUTTING TOOL
Roy V. Bladen, 74B Brigantine Dr., Birkenhead, Auckland, New Zealand
Filed Mar. 25, 1980, Ser. No. 133,679
Claims priority, application New Zealand, May 10, 1979, 16281
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

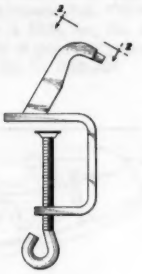
266,479
MULTIPURPOSE TOOL
Shinichi Hayakawa, Seki, Japan, assignor to Hayakawa Industry Co., Ltd., Seki, Japan
Filed Sep. 23, 1980, Ser. No. 190,041
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—17



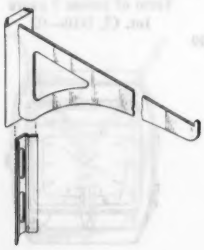
266,480
PULL TAB REMOVER
Paul F. Reel, 836 Adams St., NW., Warren, Ohio 44482
Filed May 5, 1980, Ser. No. 146,628
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—40



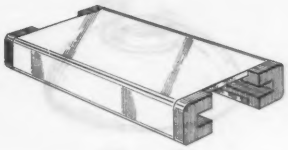
266,481
SLIDER HOLDER
Evan E. Davies, Condell Park, Australia, assignor to Talon, Inc., Meadville, Pa.
Filed Jun. 21, 1979, Ser. No. 50,949
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—73



266,482
COMBINED SHELF BRACKET AND WALL SUPPORT
Leonard Goldstein, 660 Berriman St., Brooklyn, N.Y. 11208
Filed Feb. 19, 1980, Ser. No. 122,556
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—381



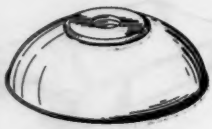
266,483
MARINE SLIDE
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.
Filed Jan. 14, 1980, Ser. No. 111,765
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



266,484
BUNDLING TIE
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Division of Ser. No. 929,592, Jul. 31, 1978. This application May 12, 1980, Ser. No. 149,226
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D8—394

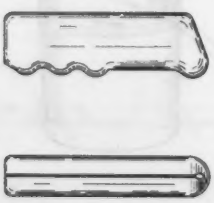
266,485
PACKAGING CONTAINER OR SIMILAR ARTICLE
Richard Guerette, Senneville, Canada, assignor to Arnoldware-Rogers (Canada) Ltee, Rawdon, Canada
Filed Mar. 11, 1980, Ser. No. 129,221
Claims priority, application Canada, Oct. 4, 1979, 04-10-79-14
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—349

266,486
FUEL CONTAINER
William R. Lütz, Chamblee, Ga., assignor to Conceptual Factors, Inc., Atlanta, Ga.
Filed May 31, 1979, Ser. No. 44,112
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—352



266,487
PACKAGING CONTAINER FOR A BOTTLE OR THE LIKE
Serge Mansau, Neuilly sur Seine, France, assignor to Lever Brothers Company, New York, N.Y.
Filed Jan. 28, 1980, Ser. No. 116,171
Claims priority, application United Kingdom, Aug. 28, 1979, 991330
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—430

266,488
HANDLE FOR SHOPPING BAG OR SIMILAR ARTICLE
Willie J. Marshall, P.O. Box 8201, St. Louis, Mo. 63156
Filed Aug. 6, 1979, Ser. No. 63,918
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—434

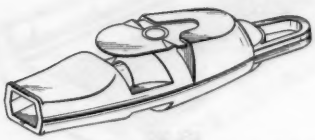


266,489
MODULAR PACKAGING CONTAINER FOR A BOTTLE
Harvard Toback, New York, N.Y., assignor to Robert D. Brody and Norma Matalon, both of New York, N.Y.
Filed Sep. 27, 1979, Ser. No. 79,389
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—455

266,490
WRIST WATCH
Koichi Takahashi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Aug. 28, 1980, Ser. No. 182,271
Claims priority, application Japan, May 1, 1980, 55-17342
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

266,491
WRIST WATCH
Tadao Abe, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Sep. 29, 1980, Ser. No. 192,050
Claims priority, application Japan, Apr. 16, 1980, 55-15118
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—39

266,492
COMBINED WHISTLE AND CRICKET NOISE MAKER FOR USE AS A DIVERS SIGNAL ABOVE AND BELOW THE WATER SURFACE
Karl E. Oppermann, Sr., and Karl E. Oppermann, Jr., both of 4919 Loch Lomond, Houston, Tex. 77096
Filed Mar. 3, 1980, Ser. No. 126,863
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—119



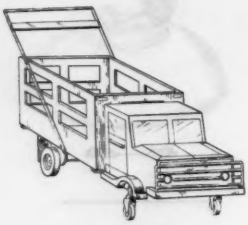
266,493
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,768
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

266,494
JEWELRY PIN
Evelyn A. Martin, 2920 Dean Blvd., Minneapolis, Minn. 55416
Filed May 29, 1980, Ser. No. 154,231
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—41

266,495
LAPEL PIN
Maurice Past, R.R. 2, Dubuisson, Val d'Or, Prov. of Quebec, Canada (J9P 4N7)
Filed May 23, 1980, Ser. No. 152,702
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—58

266,496
MEMORIAL PLAQUE
Lewis J. King, Jr., Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 7, 1979, Ser. No. 92,158
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—136

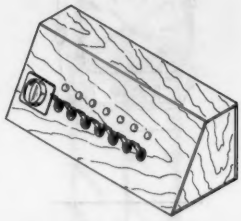
266,497
BABY CARRIAGE
Manuel de Jesus Veliz Villalta, 5619 E. 10th St., Kansas City, Mo. 64127
Filed Jan. 25, 1980, Ser. No. 115,216
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—128



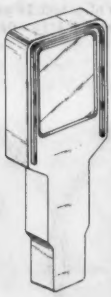
266,498
COLLAPSIBLE PERAMBULATOR FRAME
Giuseppe Perego, Via De Gasperi, 20043-Arcore Milano, Italy
Filed Jan. 31, 1980, Ser. No. 117,121
Claims priority, application Italy, Aug. 9, 1979, 22325/79[U]
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—128

266,499
INVALID CHAIR
Brent L. Twitchell, 3451 W. 4400 South, Granger, Utah 84120, and Kendel S. Twitchell, 1569 Shenandoah Cr., Murray, Utah 84107
Filed Nov. 15, 1979, Ser. No. 94,376
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—131

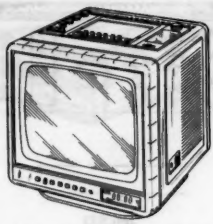
266,500
PORTABLE CONTROL SYSTEM CONSOLE OR SIMILAR ARTICLE
D. Craig Garbe, 689 Enchanted Way, Pacific Palisades, Calif. 90272
Filed Nov. 30, 1978, Ser. No. 964,835
Term of patent 3½ years
Int. Cl. D13—*03*
U.S. Cl. D13—12



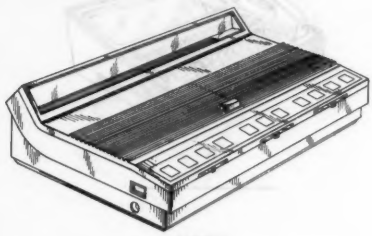
266,501
ELECTRONIC HAND CONTROL UNIT FOR ADJUSTABLE BED
Thomas Stefanik, Middlesex, N.J., assignor to Michael Pascal, North Plainfield, N.J.
Filed Feb. 19, 1980, Ser. No. 122,652
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38



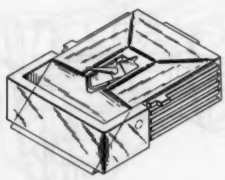
266,502
COMBINED TELEVISION RECEIVER, RADIO RECEIVER, CASSETTE RECORDER AND CLOCK
Gerard J. Heijnen, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 25, 1980, Ser. No. 143,662
Claims priority, application Benelux, Oct. 29, 1979, 54159-00
Term of patent 14 years
Int. Cl. D14—*01, 03;* D10—*01*
U.S. Cl. D14—5



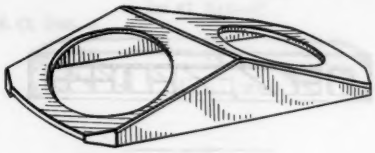
266,503
TAPE RECORDING MACHINE
Arthur J. Pulos, Fayetteville, and Michael Cridland, Manlius, both of N.Y., assignors to Dictaphone Corporation, Rye, N.Y.
Filed May 16, 1980, Ser. No. 150,313
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



266,504
PHONOGRAPH STYLUS
Tsugikuma Minamizono, Numazu, Japan, assignor to The Astatic Corporation, Conneaut, Ohio
Filed Apr. 23, 1980, Ser. No. 142,963
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—28

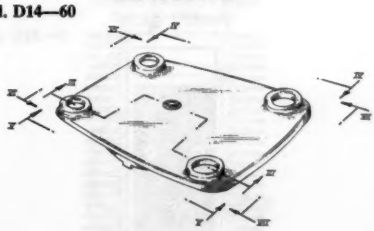


266,505
LOUDSPEAKER MOUNTING
Jack R. Saidel, Flossmoor, Ill., assignor to Electronic Industries, Inc., Harvey, Ill.
Filed May 30, 1980, Ser. No. 154,794
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D14—37



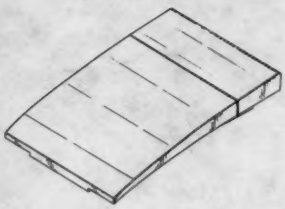
266,506
VEHICULAR TELEPHONE SET OF SIMILAR ARTICLE
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1980, Ser. No. 144,637
Claims priority, application Japan, Nov. 8, 1979, 54-046619
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

266,507
ROTATABLE TELEPHONE SUPPORT
Robert A. Cavanagh, 7/22 St. Hilliers Rd., Auburn, New South Wales 2144, Australia
Filed Apr. 7, 1980, Ser. No. 137,657
Claims priority, application Australia, Oct. 15, 1979, 79,269
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

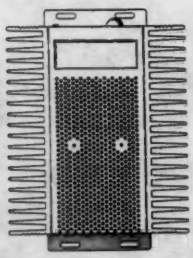


266,508
TUNER
Jun-Ichi Yamamoto; Toshihito Nomura, and Noboru Keitoku, all of Tokyo, Japan, assignors to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1980, Ser. No. 173,408
Claims priority, application Japan, Jan. 31, 1980, 55-2848
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—71

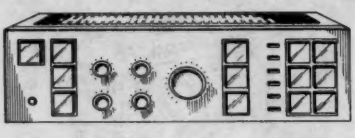
266,509
HOUSING FOR AN INTERCOM OR SIMILAR BUSINESS MACHINE
Eric J. Marshall, 5 Carlton Gardens, London, SW1, England
Filed Feb. 25, 1980, Ser. No. 124,647
Claims priority, application United Kingdom, Aug. 28, 1979, 991324
Term of patent 14 years
Int. Cl. D14—*02, 03;* D18—*01*
U.S. Cl. D14—92



266,510
AMPLIFIER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1979, Ser. No. 42,070
Claims priority, application Japan, Jan. 22, 1979, 54-1892
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



266,511
AMPLIFIER
Jun-Ichi Yamamoto, and Noboru Keitoku, both of Tokyo, Japan, assignors to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1980, Ser. No. 173,652
Claims priority, application Japan, Jan. 31, 1980, 55-2847
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



266,512
MULTIPLE MODE COMMUNICATION TERMINAL
Gerard A. Furbershaw, Santa Clara; Stephen B. Albert, Menlo Park, and Dale W. Gruye, Portola Valley, all of Calif., assignors to Quadri Netics International Technology, Inc., Walnut Creek, Calif.
Filed Apr. 23, 1980, Ser. No. 143,815
Term of patent 14 years
Int. Cl. D14—*02, 03*
U.S. Cl. D14—101

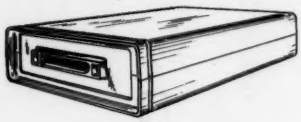
266,513
CHECK PROCESSING TERMINAL
Daniel Richelet, Vence, and Gilbert Pedinielli, Nice, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1979, Ser. No. 107,226
Claims priority, application France, Jul. 6, 1979, 79 77719
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—103

266,514

MEMORY CARTRIDGE FOR ELECTRONIC PRINTER CONTROL

Clifford S. Fernalld, Jr., Xenia, and Charlie H. Hill, Jr., Dayton, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 14, 1980, Ser. No. 168,966
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—114



266,515

COMBINED SHELF INDEX AND KEYBOARD FOR A FILE RETRIEVAL SYSTEM

Roy Kanitz, Belpre, Ohio, assignor to Kardex Systems, Inc., Marietta, Ohio

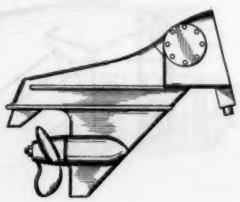
Filed Jul. 11, 1980, Ser. No. 152,568
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—115

266,516

OUTBOARD UNIT OF AN INBOARD-OUTBOARD DRIVE FOR WATERCRAFT

Elmer C. Kiekhaefer, 2408 Cypress Gardens Rd., Winter Haven, Fla. 33880

Filed Aug. 24, 1979, Ser. No. 69,603
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—4

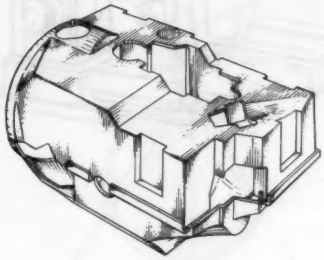


266,517

FUEL PUMP ANTI-TAMPER ENCLOSURE

Donahl L. Werst, 4515 Snow Mountain Rd., Yakima, Wash. 98908; Richard L. Roberts, 914 S. Pines, Spokane, Wash. 98202; Michael A. Hudson, 136 Roza Vista Dr.; Robert C. Ray, 3014 Butterfield Rd., both of Yakima, Wash. 98901, and John O. Holloway, 14203 NW. Science Park Dr., Portland, Oreg. 97229

Filed Apr. 4, 1980, Ser. No. 137,504
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



266,518

REMOTE CONTROL OIL SUMP DRAIN VALVE

Warner O. Harris, 2nd Floor, No. 35, Chen Hsing St., Shih Pai Rd., Tienmou, Taipei (112), Taiwan

Filed May 27, 1980, Ser. No. 153,431
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5

266,519

COMBINED SEWING MACHINE AND WORK SUPPORT EXTENSION

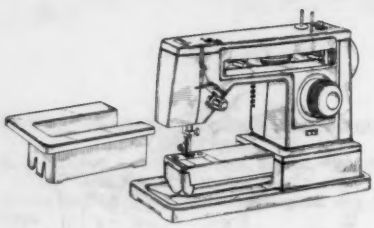
Donald M. Genaro, Haworth, N.J., and Cristian J. Felix, Flushing, N.Y., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 12, 1979, Ser. No. 84,348

Term of patent 14 years

Int. Cl. D15—*06*

U.S. Cl. D15—68



266,520

MATERIAL MACHINING DEVICE ENCLOSURE

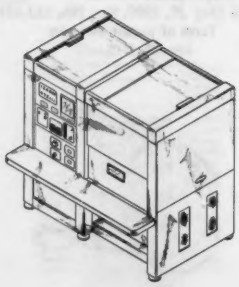
Simon L. Engel, Sunnyvale, Calif., assignor to HDE Systems, Inc., Sunnyvale, Calif.

Filed Aug. 20, 1979, Ser. No. 67,877

Term of patent 14 years

Int. Cl. D15—*09*

U.S. Cl. D15—122



266,521

SHANK ADAPTER FOR A ROCK DRILLING MACHINE

Gosta C. Gustafsson, Norberg, Sweden, assignor to Fagersta AB, Fagersta, Sweden

Filed Apr. 29, 1980, Ser. No. 144,853

Claims priority, application Sweden, Nov. 2, 1979, 79-2431

Term of patent 14 years

Int. Cl. D15—*09*

U.S. Cl. D15—138

266,522

TAPE FOLDER

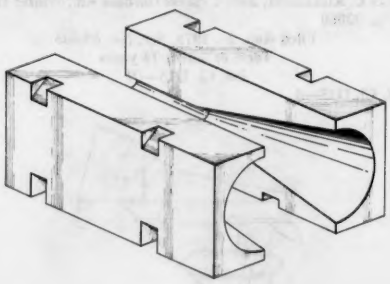
Daniel A. Norris, Dallas, and Frank L. Sweet, Carrollton, both of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Apr. 14, 1980, Ser. No. 139,928

Term of patent 14 years

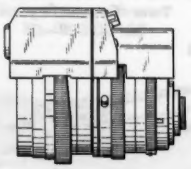
Int. Cl. D15—*99*

U.S. Cl. D15—145

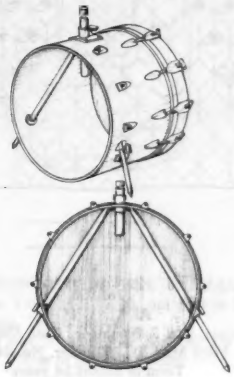


266,523
SORTER FOR USE WITH A COPYING MACHINE
Shigeki Yasutani, Kashiwa, and Kunio Hara, Chiba, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 12, 1980, Ser. No. 148,703
Claims priority, application Japan, Nov. 20, 1979, 54-48396
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32

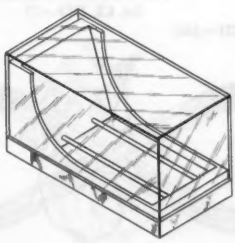
266,524
AUTOMATIC FOCUSING LENS
Hiroshi Matsushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 27, 1980, Ser. No. 163,417
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—134



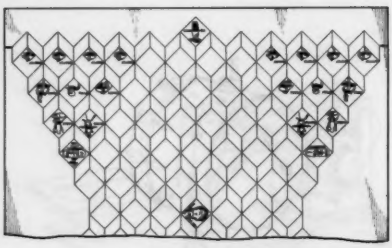
266,525
BASS DRUM
Lawrence J. Kelly, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Feb. 29, 1980, Ser. No. 126,023
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



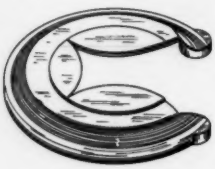
266,526
PHOTOGRAPH STORAGE AND DISPLAY CASE
Robert E. Raine, 196 Third St., Stoughton, Mass. 02072
Filed Apr. 25, 1980, Ser. No. 143,884
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



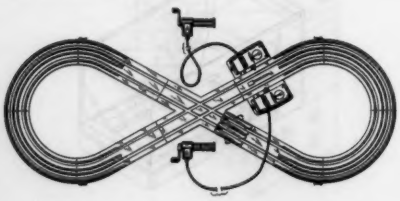
266,527
BOARD GAME
Robert L. Trist, Corner William & Patrick Sts., Laidley, Queensland, Australia
Filed Jan. 16, 1980, Ser. No. 112,454
Claims priority, application Australia, Jul. 18, 1979, 78451
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—30



266,528
AERIAL TOY
Mark S. Bayless, Rte. 2, Napoleon, Ohio 43545
Filed May 31, 1979, Ser. No. 44,118
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—86

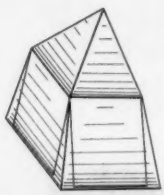


266,529
TOY RACING GAME TRACK
Eiji Aoki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Feb. 27, 1980, Ser. No. 125,220
Claims priority, application Japan, Aug. 30, 1979, 54-36223
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



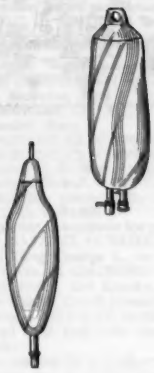
266,530
PHYSICAL EXERCISER
Jean-Pierre M. Lafont, 6, rue du Centre, Neuilly-sur-Seine (Hauts-de-Seine), France
Filed Apr. 2, 1979, Ser. No. 26,183
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

266,531
TENT FOR USE WITH TRAILER OR THE LIKE
Roger J. Murphy, 1473 Keeler Dr., Irving, Tex. 75060
Filed May 29, 1980, Ser. No. 154,213
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

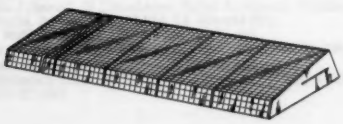


266,532
MANUALLY HELD BODY MASSAGER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed May 27, 1980, Ser. No. 153,838
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—41

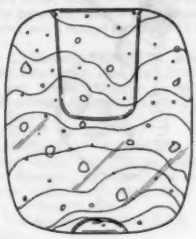
266,533
COLLAPSIBLE SOLUTION CONTAINER FOR MEDICAL LIQUIDS
Thomas D. Wilson, Wyoming, Minn., and William G. Scott, Carpentersville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 9, 1979, Ser. No. 83,007
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58



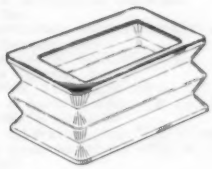
266,534
GREENHOUSE
Walter A. Johanson, 341 Irvine, St. Paul, Minn. 55102
Filed Oct. 31, 1980, Ser. No. 202,718
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—15



266,535
COMBINATION CANDLESTICK AND BOWL
Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 13, 1979, Ser. No. 93,824
Claims priority, application Finland, May 18, 1979, 331/79
Term of patent 14 years
Int. Cl. D26—*01;* D7—*01*
U.S. Cl. D26—10



266,536
FOOT COVER FOR AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,304
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—113



266,537
COMBINED CONTAINER AND APPLICATOR FOR HAIR DYE
Evan R. Kahn, 257 NE. 192nd St., North Miami Beach, Fla. 33179
Filed Mar. 13, 1980, Ser. No. 130,105
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7

266,538

COMBINED CONTAINER AND APPLICATOR FOR HAIR DYE

Evan R. Kahn, 257 NE. 192nd St., North Miami Beach, Fla. 33179

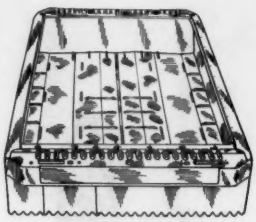
Filed Mar. 13, 1980, Ser. No. 130,106
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D28—7

266,539

BOX FOR TRANSPORTING FISH

Göran S. Larson, Gothenburg, Sweden, assignor to Fiskladan Packing AB, Sweden

Filed Feb. 19, 1980, Ser. No. 122,258
Claims priority, application Sweden, Nov. 1, 1979, 2420/79
Term of patent 3½ years
Int. Cl. D3—*99*
U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See*—
Christ, Bruno; and Kesselring, Kurt, 4,354,035, Cl. 560-75.000.

A/S Raufoss Ammunisjonsfabrikker: *See*—
Jacobsen, Kjell O., 4,353,301, Cl. 102-334.000.
Strandli, Kaare R.; and Ostlie, Arne M., 4,353,302, Cl. 102-364.000.

Abbott Laboratories: *See*—
Muetterties, Andrew J.; Genese, Joseph N.; and Seberg, Charles H., 4,353,369, Cl. 128-214.400.

Abcor, Inc.: *See*—
Mir, Leon; and Zahka, Joseph, 4,353,715, Cl. 55-22.000.

Abe, Masao; Ichinose, Hisashi; and Noda, Yuzuru, to Nitto Electric Industrial Co., Ltd. Process for the production of polyquinazolone-based polymers. 4,354,017, Cl. 528-172.000.

Abernathy, Frank W. Solar energy conversion plant. 4,354,117, Cl. 290-1.00R.

Abo El-Nil, Mostafa M., to Weyerhaeuser Company. Method for asexual reproduction of coniferous trees. 4,353,184, Cl. 47-58.000.

Abrams, Abraham; and Baumann, John J., to Uniwave, Inc. Wide flow-range lubricant distributor. 4,353,435, Cl. 184-6.260.

ACF Industries, Incorporated: *See*—
Jantzen, Steven L., 4,353,310, Cl. 105-199.00C.
Jantzen, Steven L., 4,353,311, Cl. 105-199.00C.

Acker, Rolf-Dieter; Hamprecht, Gerhard; Parg, Adolf; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 3,4,5,6-Tetrahydro-1,2,4,6-thiatriazine-3,5-dione-1,1-dioxides; processes for controlling undesired plant growth. 4,353,732, Cl. 71-91.000.

Ackerfeldt, Bo I. Arrangement in machines for processing logs, blocks and like workpieces. 4,353,276, Cl. 83-708.000.

Acton, Edward M.; and Tong, George L., to SRI International. 5-Iminodoxorubicin. 4,353,894, Cl. 424-180.000.

Adachi, Takeshi; Suzuki, Hideo; and Kaneko, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Chord generating apparatus of electronic musical instrument. 4,353,278, Cl. 84-1.010.

Adler, Harold A. Closed fluid loop solar thermodynamic system. 4,353,212, Cl. 60-622.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Doyen, Joel; and Raisin, Jean P., 4,353,539, Cl. 271-10.000.

AGFA-Gevaert AG: *See*—
Helling, Gunter; Wingender, Kaspar; Himmelmann, Wolfgang; and Beck, Manfred, 4,353,972, Cl. 430-213.000.
Helling, Gunter; and Fuhr, Karl, 4,353,980, Cl. 430-532.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.

Agfa-Gevaert, N.V.: *See*—
Janssens, Wilhelmus; and Claeys, Daniel A., 4,353,975, Cl. 430-239.000.

Agri-Flex, Inc.: *See*—
Spendlow, Harry C., Sr.; and Houghton, William E., 4,353,524, Cl. 251-145.000.

Ahner, Walter D.; and Malosh, James B., to United States Steel Corporation. Baffle structure for blast furnace stove. 4,353,688, Cl. 432-217.000.

Aihara, Hiroshi, to Takeda Riken Kogyo Kabushikikaisha. A-D Converter with fine resolution. 4,354,176, Cl. 340-347.0NT.

Aisin Seiki Kabushiki Kaisha: *See*—
Nakamura, Kaoru; and Funabashi, Akira, 4,353,479, Cl. 220-301.000.

Aisin-Warner Kabushiki Kaisha: *See*—
Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, 4,354,236, Cl. 364-424.100.

Akihiko Hiroe: *See*—
Hayashi, Katsurou, 4,353,315, Cl. 110-281.000.

Akita, Sigeyuki, to Nippon Soken, Inc. Capacitance sensing device. 4,354,219, Cl. 361-284.000.

Akst, Irving B.; and Stinecipher, Mary M. Direct process for explosives. 4,353,758, Cl. 149-109.600.

A.G. Davis Gage and Engineering Co.: *See*—
Pieczulewski, Daniel J., 4,353,271, Cl. 74-826.000.

Akzona Incorporated: *See*—
Pannekeet, Wilhelmus, 4,353,992, Cl. 521-26.000.

Albany, Stanley J.; and Lizardi, Robert, Jr., to C-Thru Aluminum Awning Co. Patio enclosure with electrical conduit housing. 4,354,052, Cl. 174-48.000.

Alberty, Joachim E.: *See*—
Kaila, Juhani O. W.; Honkanen, Erkki J.; Alberty, Joachim E.; and Hukki, Jaakko J., 4,353,914, Cl. 424-267.000.

Albery, William. Saw. 4,353,165, Cl. 30-376.000.

Albrecht, Helmut. Fireplace heat exchanger. 4,353,350, Cl. 126-121.000.

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Mohrenstein-Ertel, Michael; and Albrecht, Helmut, 4,353,433, Cl. 181-207.000.

Alexander, Douglas E.: *See*—
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Alexander, Ian J.; and Scott, Roger J., to Scott Bader Company Limited. Photo curable polyester with benzoyl oxime carbonate, photo reducible dye (eosin), and a benzyl amine. 4,353,787, Cl. 204-159.150.

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Allen, William M.; and Trabue, Gordon C., to Chemetron Process Equipment, Inc. Rendering dryer. 4,353,413, Cl. 165-92.000.

Allied Corporation: *See*—
Ray, Ranjan, 4,353,737, Cl. 75-0.50R.
Yancey, Paul J., 4,353,875, Cl. 422-249.000.

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Aluminum Company of America: *See*—
Chilko, Robert J., 4,353,485, Cl. 222-243.000.

Amano, Hiroyuki: *See*—
Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, 4,354,236, Cl. 364-424.100.

Ambe, Satoshi: *See*—
Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.

Amca International Corporation: *See*—
Chapman, Eugene K., 4,353,233, Cl. 72-88.000.

Amerace Corporation: *See*—
Siebens, Larry N.; and Borgstrom, Alan D., 4,353,611, Cl. 339-92.00R.

American Cyanamid Co.: *See*—
Lovell, James B., 4,353,907, Cl. 424-251.000.
Rickelton, William A.; Robertson, Allan J.; and Burley, David R., 4,353,883, Cl. 423-139.000.

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Humberstone, Kenneth J., 4,353,535, Cl. 266-275.000.

American Thread: *See*—
Moertel, George B., 4,353,760, Cl. 156-66.000.

Ampex Corporation: *See*—
Ryan, John O.; and Corkery, Joseph L., 4,354,243, Cl. 364-515.000.

Amtec Development Company: *See*—
Maloblocki, Richard, 4,353,174, Cl. 37-58.000.

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Karpenko, Anatole N., 4,353,390, Cl. 137-527.800.

Anderson, Arthur I., to North American Car Corporation. Hopper bottom unit. 4,353,668, Cl. 406-90.000.

Anderson, Lester M.; and Warnock, John D., to Edison International, Inc. Fluidic control system for turbines. 4,353,215, Cl. 60-660.000.

Anderson, Paul A.: *See*—
Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., 4,353,398, Cl. 141-91.000.

Anderson, Ray C. Wheelie support. 4,353,571, Cl. 280-295.000.

Anderson, Tyrone D. Athletic reflex machine. 4,353,545, Cl. 272-76.000.

Andrews, Peter: *See*—
Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,353,913, Cl. 424-263.000.

Anger, Anton, to Oesterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg. Injection mold for making a synthetic thermoplastic article having a tubular end portion. 4,353,522, Cl. 249-144.000.

Annen, Klaus: *See*—
Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,353,985, Cl. 435-59.000.

Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with an attenuated superactive multimetallic catalytic composite for use therein. 4,353,815, Cl. 252-466.0PT.

Aoshima, Atsushi; Mitsui, Ryoichi; and Nihei, Hitoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for preparing methacrolein. 4,354,044, Cl. 568-479.000.

Arai, Hideaki: *See*—
Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.

Arakawa, Tadao, to Hitachi, Ltd. Method of water level control for a combined cycle power plant and control system therefor. 4,353,204, Cl. 60-39.020.

Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, to C. Uyemura & Co., Ltd. Method for controlling electroless plating bath. 4,353,933, Cl. 427-8.000.

Araseki, Takashi; and Ozawa, Kazunori, to Nippon Electric Company, Ltd. ADPCM System for speech or like signals. 4,354,273, Cl. 375-27.000.

Argazzi, Dennis J., to Loctite Corporation. Sealant applying apparatus. 4,353,325, Cl. 118-683.000.
Arieh, Simon; Budliger, Jean-Pierre; and Courvoisier, Guy, to Battelle Development Corporation. Tennis racket with frame mounted oscillatable weights. 4,353,551, Cl. 273-73.00R.
Armini, Anthony J.; and Little, Roger G., to Spire Corporation. Solar cell junction processing system. 4,353,160, Cl. 29-572.000.
Armond, Joseph A.; and Buky, Gabriel R. Battery charge system. 4,354,149, Cl. 320-40.000.
Arnold, Everett L.; and Moore, James M. Combined lid and pouring spout for a container having a U-shaped sealing channel. 4,353,489, Cl. 222-570.000.
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Iwasa, Yamahiro, 4,353,816, Cl. 252-512.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
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Asaho, Ryuichi: *See*—
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Ash, William J. M. Marine bollard made of layered plastics resin and glass reinforcement. 4,353,319, Cl. 114-218.000.
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Atago, Takeshi: *See*—
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Atal, Bishnu S., to Bell Telephone Laboratories, Incorporated. Predictive signal coding with partitioned quantization. 4,354,057, Cl. 179-1.05A.
Atare, Zeltite A.: *See*—
Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A., 4,353,823, Cl. 260-112.50R.
Atlantic Richfield Company: *See*—
Turner, Gary B., 4,353,161, Cl. 29-572.000.
ATN Research & Development Corporation: *See*—
Partin, Norman D.; and Watson, Charles L., 4,353,453, Cl. 194-100.00A.
Aubourg, Philippe: *See*—
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Augy, Henri: *See*—
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Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., to Honeywell Inc. Alternate action mechanism. 4,354,074, Cl. 200-153.00J.
Autoipari Kutato Intezet: *See*—
Cser, Gyula; and Spinnler, Fritz, 4,353,211, Cl. 60-605.000.
Automatic Liquid Packaging, Inc.: *See*—
Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., 4,353,398, Cl. 141-91.000.
Automation Industries, Inc.: *See*—
Kutnyak, Thomas A., 4,354,051, Cl. 174-47.000.
Avions Marcel Dassault-Breguet Aviation: *See*—
Picard, Claude; and Daugny, Daniel, 4,353,268, Cl. 74-587.000.
Ayer, George E., to Bunker Ramo Corporation. Medical cable set and electrode therefor. 4,353,372, Cl. 128-640.000.
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Baba, Toshihiko: *See*—
Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.
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Bacher, Michel, to Valeo. Diaphragm clutch mechanism. 4,353,451, Cl. 192-89.00B.
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Bain, Claud N. Portable auxiliary warming room apparatus. 4,354,091, Cl. 219-213.000.
Baker, Edward G.: *See*—
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Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., to International Business Machines Corporation. Partial line turnaround for printers. 4,353,298, Cl. 101-93.050.
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., to Monsanto Company. Animal feed supplement having reduced corrosion characteristics. 4,353,924, Cl. 424-317.000.
Ball, William J.; and Stewart, David G., to British Petroleum Company Limited, The. Process for the production of aromatic hydrocarbons. 4,354,049, Cl. 585-415.000.
Ballu, Vincent; and Perret, Remi, to Rhodic. Apparatus for mixing chemical products under running water. 4,353,876, Cl. 422-263.000.
Bally Manufacturing Corporation: *See*—
Fisher, Laren D., 4,353,554, Cl. 273-143.00R.
Balsamo, Angelo: *See*—
Merlo, Armando M., 4,353,641, Cl. 355-38.000.
Bandag Incorporated: *See*—
Burche, Ioan A.; and Brodie, Edwin T., 4,353,402, Cl. 152-209.00R.
Bankert, Ralph A., to Hercules Incorporated. Process for producing quaternary ammonium compounds containing halohydrin functionality. 4,354,006, Cl. 525-359.500.
Banse, Wilhelm: *See*—
Seliger, Ewald; Dudar, Klaus; Stohr, Gunter; Millner, Rudolf; and Banse, Wilhelm, 4,353,928, Cl. 426-238.000.
Banyaszati Aknamelyito Vallalat: *See*—
Almasi, Istvan; Kassai, Ferenc; and Erdelyi, Attila, 4,353,292, Cl. 98-50.000.
Barba Grill Inc.: *See*—
Seed, Kenneth J., 4,353,347, Cl. 126-41.00R.
Barello, Lawrence J., to Butler Manufacturing Company. Programmable electronic real-time load controller providing for adaptation of load control in response to varying environmental conditions. 4,354,241, Cl. 364-492.000.
Barna, Alex J. Compound bow. 4,353,346, Cl. 124-24.00R.
Barna, Roy W. Method for continuous azeotropic processing of vegetable and protein material. 4,353,837, Cl. 260-412.400.
Barteck, Joseph C., to International Business Machines Corporation. Wideband ink drop generator. 4,354,194, Cl. 346-75.000.
Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, to AGFA-Gevaert Aktiengesellschaft. Apparatus for positioning originals in photographic copying machines. 4,353,646, Cl. 355-76.000.
Bartlit, John R.; Denton, William H.; and Sherman, Robert H., to United States of America, Energy. Hydrogen isotope separation. 4,353,871, Cl. 422-159.000.
Bartoli, Francesco: *See*—
Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, 4,353,996, Cl. 523-105.000.
Barton, John E.; Collins, David J.; and Headford, Donald W., to Imperial Chemical Industries Limited. Dihalophenoxypropionic acids and their derivatives, and their use as cotton desiccants. 4,354,034, Cl. 560-62.000.
BASF Aktiengesellschaft: *See*—
Acker, Rolf-Dieter; Hamprecht, Gerhard; Parg, Adolf; and Wuerzer, Bruno, 4,353,732, Cl. 71-91.000.
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, 4,353,833, Cl. 260-386.000.
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.
Horner, Michael; and Nissen, Axel, 4,353,836, Cl. 260-410.500.
Merger, Franz; and Fouquet, Gerd, 4,354,045, Cl. 568-487.000.
Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, 4,354,020, Cl. 528-323.000.
Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,353,904, Cl. 424-250.000.
BASF Atiengesellschaft: *See*—
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,354,031, Cl. 548-362.000.
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Cook, John H., 4,353,955, Cl. 428-246.000.
Davis, Pauls; and Wilson, Joe C., 4,354,002, Cl. 524-588.000.
Langdon, William K., 4,353,834, Cl. 260-404.500.
Bassignani, Luciano: *See*—
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Batham, John K.; Fox, Alan G.; and Jones, Evan T. R., to Foseco International Limited. Desulphurization of ferrous melts. 4,353,739, Cl. 75-58.000.
Battelle Development Corporation: *See*—
Arieh, Simon; Budliger, Jean-Pierre; and Courvoisier, Guy, 4,353,551, Cl. 273-73.00R.
Battelle Memorial Institute: *See*—
Siddiqi, Iqbal, 4,353,983, Cl. 435-11.000.
Baudouin, Jacques; Caspar, Jean-Pierre; and Gaillard, Jacques, to Lafarge. Method to produce mineral fillers containing hydrated calcium monocarboaluminate. 4,353,751, Cl. 106-306.000.
Bauer, James L.: *See*—
Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., 4,353,952, Cl. 428-201.000.
Baum, Horst: *See*—
Bock, Klaus-Detlef; and Baum, Horst, 4,353,897, Cl. 424-200.000.
Baumann, Gert F.: *See*—
Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., 4,353,995, Cl. 521-125.000.
Baumann, John J.: *See*—
Abrams, Abraham; and Baumann, John J., 4,353,435, Cl. 184-6.260.
Baumgartner, Andree G. Pocket breeches for use by a domestic animal such as a dog. 4,353,330, Cl. 119-95.000.
Bauscher, Billy J.: *See*—
Viesturs, Elmars H.; and Bauscher, Billy J., 4,353,232, Cl. 72-50.000.
Baxter Travenol Laboratories, Inc.: *See*—
Leonard, Ronald J., 4,353,799, Cl. 210-321.300.
Bayati, Abutorab, to Siemens Aktiengesellschaft. Circuit arrangement for generating a sampling pulse train for a periodic signal. 4,354,158, Cl. 328-75.000.
Bayer Aktiengesellschaft: *See*—
Keller, Wolfgang; and Weiss, Wolfgang, 4,353,874, Cl. 422-193.000.
Muschelknautz, Edgar; and Juse, Rudolf, 4,353,781, Cl. 159-2.00R.
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Beaudoin, Joseph L. Y.; and Beaudoin, Joseph F. Y. Sweeping apparatus. 4,353,143, Cl. 15-162.000.
Beck, Manfred: *See*—
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Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, to Hoechst Aktiengesellschaft. Process for the manufacture of tubing based on cellulose hydrate having a coating on its inside and apparatus for carrying out the process. 4,353,939, Cl. 427-238.000.
Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, to Hoechst Aktiengesellschaft. Process for the manufacture of tubing having a coating on its inside and apparatus for carrying out the process. 4,353,940, Cl. 427-238.000.
Becvarova, Hana: *See*—
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Beecham Group Limited: *See*—
Showell, Graham A., 4,353,906, Cl. 424-251.000.
Beegle, Mark J.: *See*—
Schorr, Ian A.; and Beegle, Mark J., 4,354,159, Cl. 330-86.000.
Beer, Frederick W.; Davis, Robert A.; Kresak, Fedor P.; and Kuev, Conio C. Package and automatic method of forming same. 4,353,196, Cl. 53-451.000.
Beery, Jack, to Xerox Corporation. Sheet feeder with pivotable baffle. 4,353,540, Cl. 271-10.000.
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Norbornyl oxyacetaldehyde. 4,354,043, Cl. 568-445.000.
Bell, Frank H., to Thiokol Corporation. Projectile for dispensing gaseous material. 4,353,303, Cl. 102-367.000.
Bell & Howell Company: *See*—
Spencer, William H., 4,354,118, Cl. 307-66.000.
Bell, Irving J.: *See*—
Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, 4,354,102, Cl. 250-201.000.
Bell, Ralph M., to Bell and Rodhouse Engineering, Inc. Two stage flush valve assembly. 4,353,138, Cl. 4-326.000.
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Bell, Ralph M., 4,353,138, Cl. 4-326.000.
Bell Telephone Laboratories, Incorporated: *See*—
Atal, Bishnu S., 4,354,057, Cl. 179-1.0SA.
Bellisio, Jules A., 4,354,054, Cl. 178-3.000.
Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., 4,354,254, Cl. 365-33.000.
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Etchison, John O., Jr.; and Jones, Robert H. W., Jr., 4,353,469, Cl. 211-41.000.
Karabinis, Peter D., 4,354,276, Cl. 455-139.000.
Mussman, Harry E., 4,354,062, Cl. 179-84.00A.
Bellis, Harold E., to Du Pont de Nemours, E. I., and Company. Method for deactivating catalyst in preparation of dimethylformamide from dimethylamine and carbon monoxide. 4,354,041, Cl. 564-123.000.
Bellisio, Jules A., to Bell Telephone Laboratories, Incorporated. Caboose signal controlled reporting arrangement for a regenerator chain. 4,354,054, Cl. 178-3.000.
Belmonte, Mark S.; Davis, James H.; and Williams, David A., to United States of America, Energy. Radioactive materials shipping cask anticontamination enclosure. 4,351,391, Cl. 137-565.000.
Beloit Corporation: *See*—
Beucker, Albert W., 4,353,296, Cl. 100-121.000.
Bender, Robert; and Duck, Peter D., to ens Bio Logicals Inc. Chemical synthesis apparatus for preparation of polynucleotides. 4,353,989, Cl. 435-287.000.
Bendix Corporation, The: *See*—
Colpaert, James J., 4,353,438, Cl. 188-79.5GC.
Parks, Kevin, 4,353,660, Cl. 403-132.000.
Putt, James B., 4,353,209, Cl. 60-547.00B.
Ritsema, Irving R., 4,353,439, Cl. 188-79.5GE.
Roberts, James K.; and Johannesen, Donald D., 4,353,437, Cl. 188-79.5GE.
Roberts, James K., 4,353,441, Cl. 188-328.000.
Bendix do Brasil Equipamentos Para Autoveiculos LTDA.: *See*—
Correa, Flavio D., 4,353,442, Cl. 188-330.000.
Beneke, Wolfgang, to Trutzschler GmbH & Co. KG. Electric pressure switch. 4,353,148, Cl. 19-105.000.
Bennett, James H., Jr. Hand held power machine with oscillating tool. 4,353,422, Cl. 172-41.000.
Benning, Vernon A., to M.L. Aviation Company Limited. Restraining device. 4,353,528, Cl. 254-360.000.
Bentler, James S. Bicycle storage and travel case. 4,353,464, Cl. 206-335.000.
Berginski, Werner-Ernst: *See*—
Speidel, Volker; Bergmann, Eduard; Kassner, Klaus; and Berginski, Werner-Ernst, 4,354,155, Cl. 324-133.000.
Bergmann, Eduard: *See*—
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Bergmann, Horst; and Reddemann, Jorg, to Daimler-Benz Aktiengesellschaft. Control device for controlling a recycling of exhaust gas of an internal combustion engine. 4,353,344, Cl. 123-569.000.
Berlex Laboratories, Inc.: *See*—
Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,353,921, Cl. 424-273.00R.
Berman, Richard M., to Delta Scan, Inc. Apparatus for producing images on radiation sensitive recording mediums. 4,353,628, Cl. 354-5.000.
Bertolacini, Ralph J.: *See*—
Pellet, Regis J.; Bertolacini, Ralph J.; and Lysholm, Donna L., 4,353,814, Cl. 252-441.000.
Bertram, James L.: *See*—
Doorakian, George A.; Duquette, Lawrence G.; and Bertram, James L., 4,354,015, Cl. 528-89.000.
Berz, Wolfgang, to Gimag Aktiengesellschaft. Granular bed filter device including a regenerative granular bed cleaning apparatus. 4,353,722, Cl. 55-294.000.
Bes, Francis. Cycle freewheel assembly and cycle wheel therefor. 4,353,447, Cl. 192-64.000.
Besik, Ferdinand. Method and an apparatus for biological treatment of waste waters. 4,353,800, Cl. 210-605.000.
Bessho, Nagayasu: *See*—
Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.
Bethlehem Steel Corporation: *See*—
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Vander Voort, George F., 4,353,756, Cl. 148-143.000.
Beucker, Albert W., to Beloit Corporation. Use of anisotropic rubber for venta-nip rolls. 4,353,296, Cl. 100-121.000.
Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, to Merrell Toraude et Compagnie. Preparation of fluorinated methyl aminoalkanoic acids and novel process intermediates. 4,353,828, Cl. 260-326.0NS.
Bhanumati, Nanduri; and Sattur, Pralhad B., to Council of Scientific & Industrial Research. Anthranilic acid esters. 4,354,033, Cl. 560-48.000.
BICC Limited: *See*—
Parr, David T., 4,353,619, Cl. 350-96.210.
BICC Public Limited Company: *See*—
Gregory, Brian, 4,354,050, Cl. 174-22.00R.
Bickel, Hans; and Kump, Wilhelm, to Ciba-Geigy Corporation. Substituted rifamycins. 4,353,826, Cl. 260-239.30P.
Bickford, Allan M. Carbon dioxide absorber. 4,353,366, Cl. 128-205.120.
Biedermann, Ernst: *See*—
Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.
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Billot, Michel: *See*—
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Billottet, Henri; Augy, Henri; and Quoy, Andre, to Thomson-CSF. Carried weapon system with a high orientation mobility. 4,353,284, Cl. 89-40.00B.
Bilton, John: *See*—
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Bio-Energy Systems, Inc.: *See*—
Zinn, Michael F., 4,353,352, Cl. 126-426.000.
Bionaz, Jean E., to Societe Anonyme Francaise du Ferodo. Transmission with hydraulic coupling device and locking clutch suitable for a motor vehicle. 4,353,444, Cl. 192-3.290.
Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., to Imperial Chemical Industries Limited. Hydraulic cement composition. 4,353,746, Cl. 106-89.000.
Birchall, James D.; and Kendall, Kevin, to Imperial Chemical Industries Limited. Hydraulic cement composition. 4,353,747, Cl. 106-89.000.
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Biro, Joseph E.: *See*—
Harter, James L.; and Biro, Joseph E., 4,353,411, Cl. 165-48.00R.
Birr, Christian; and Stollenwerk, Ulrich, to Max Planck-Gesellschaft zur Forderung der Wissenschaften E.V. Method of preparing thymosin α_1 and derivatives thereof. 4,353,821, Cl. 260-112.50R.
Bitsch, Harald; and Knaack, Karl, to Mannesmann DeMag A.G. Mounting for a driven wheel. 4,353,606, Cl. 308-189.00R.
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Quittkat, Wolfram, 4,353,750, Cl. 106-100.000.
Black & Decker Inc.: *See*—
Overbury, Douglas G.; and Overy, Colin, 4,353,163, Cl. 30-123.400.
Simpson, Frank F., 4,353,425, Cl. 173-109.000.
Black, Robert B. Energy conversion system. 4,353,348, Cl. 126-91.00R.
Blader, Ralph W.: *See*—
Harris, Richard L., 4,353,399, Cl. 144-2.00R.
Blakeslee, Thomas R., to Portec, Inc. Guidance system detector circuit. 4,354,235, Cl. 364-424.000.
Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., to Bell Telephone Laboratories, Incorporated. Devices depending on garnet materials. 4,354,254, Cl. 365-33.000.
Blankenship, Johnny E.: *See*—
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Bledsoe, Gordon G.: *See*—
Weaver, David A.; and Bledsoe, Gordon G., 4,353,515, Cl. 242-86.700.
Block, Jacob: *See*—
Green, Peter C.; and Block, Jacob, 4,353,804, Cl. 252-8.50A.
Bloom, Arlene N., executrix: *See*—
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,353,976, Cl. 430-251.000.
Bloom, Stanley M., deceased (by Bloom, Arlene N., executrix); and Sachdev, Krishna G., to Polaroid Corporation. Novel silver complexing agents. 4,353,976, Cl. 430-251.000.
Blount, David H. Process for the production of alkali metal silicate-organic plastics. 4,353,999, Cl. 524-3.000.
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Bock, Klaus-Detlef; and Baum, Horst, to Hoechst Aktiengesellschaft. Pesticidal compositions. 4,353,897, Cl. 424-200.000.
Boden, Richard M.: *See*—
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,354,043, Cl. 568-445.000.
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Yamada, Kyota; and Komatsu, Akira, 4,354,067, Cl. 179-146.00H.
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Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, 4,353,895, Cl. 424-182.000.
Boeing Company, The: *See*—
Bogart, Patrick M., 4,353,519, Cl. 248-72.000.
Lambregts, Antonius A.; and Hansen, Rolf, 4,354,237, Cl. 364-428.000.
Rudolph, Peter K. C., 4,353,517, Cl. 244-216.000.
Bogart, Patrick M., to Boeing Company, The. Support attachment for structural stringers. 4,353,519, Cl. 248-72.000.
Bohm, Leslie E.: *See*—
Jackson, W. Shaun; and Bohm, Leslie E., 4,353,490, Cl. 224-32.00A.
Boise Cascade Corporation: *See*—
Woerz, Stephen E.; and Canup, Travis K., 4,353,761, Cl. 156-69.000.
Boles, Charles L.: *See*—
Flanigan, Richard J.; and Boles, Charles L., 4,353,400, Cl. 144-117.00R.
Bone, David P., to Quaker Oats Company, The. Refrigerator pourable and stable pancake batters for preparing stable pancakes and method for preparing. 4,353,932, Cl. 426-532.000.
Bookelmann, Theodorus F. I.: *See*—
Munnichs, Cornelis M.; and Bookelmann, Theodorus F. I., 4,353,870, Cl. 422-129.000.
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Davies, Robert; Newton, Barrie H.; and Booth, Peter L., 4,354,165, Cl. 331-96.000.
Borburgh, Jacques; and Feight, Ingmar, to Siemens Aktiengesellschaft. Ultrasonic transducer with a plastic piezoelectric receiving layer and a non plastic transmitting layer. 4,354,132, Cl. 310-334.000.
Bordry, Herve; Layec, Herve; and L'Hostis, Jean-Claude. Computer-communications concentrator for transmission and switching of packetized data. 4,354,263, Cl. 370-94.000.
Bore, Pierre; and De Labbey, Arnaud, to L'Oreal. Evaluation of the state of change of keratin fibers. 4,353,708, Cl. 23-230.00B.
Borgstrom, Alan D.: *See*—
Siebens, Larry N.; and Borgstrom, Alan D., 4,353,611, Cl. 339-92.00R.
Bormida, John, Jr. Retrofittable energy conserving damper. 4,353,349, Cl. 126-112.000.
Born, Richard C.: *See*—
Flickinger, Charles E.; and Born, Richard C., 4,354,226, Cl. 364-200.000.
Bosch-Siemens Hausgerate GmbH: *See*—
Dienemann, Wolfgang, 4,353,223, Cl. 62-442.000.
Husslein, Julius; and Klement, Johann, 4,354,084, Cl. 219-10.55R.
Bostedt, Jan. Continuous casting machine. 4,353,407, Cl. 164-468.000.
Bostian, Clarence L., Jr. Method of preparation of fibers and fibers obtained therefrom. 4,353,509, Cl. 241-24.000.
Bouda, Francis J. Method and apparatus for continuously attaching elastic strands to disposable absorbent products. 4,353,762, Cl. 156-164.000.
Bouygues, Pierre A.; and Delcoustal, Jean-Marie, to Delle-Alsthom. Drainage device. 4,353,387, Cl. 137-203.000.
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Bouyssounouse, Bernard; and Bouyssounouse, Chantal, 4,354,275, Cl. 455-54.000.
Bowers, Geoffrey, to Seasonmakers Pty. (Australia) Lts. Erosion control means. 4,353,946, Cl. 428-109.000.
Bowman, James L., to Long-Lok Fasteners Corporation. Apparatus and method of forming self-locking fastener. 4,353,941, Cl. 427-287.000.
Boyce, William A., to Macaster Controls, Inc. Programmable steering control apparatus for motor vehicles. 4,353,568, Cl. 280-94.000.
Boyle, Robert E. Battery water-filling systems and check valves therefor. 4,353,968, Cl. 429-64.000.
Braid, Milton, to Mobil Oil Corporation. Lubricants and fuels containing boroxarophenanthrene compounds. 4,353,807, Cl. 252-49.600.
Brandley, Reinard W. Device for transferring loads between adjoining concrete slabs. 4,353,666, Cl. 404-60.000.
Brandram, Thomas C.: *See*—
Weeks, Michael W.; and Brandram, Thomas C., 4,354,183, Cl. 340-682.000.
Brant, Alberto: *See*—
Re, Luciano; Brant, Alberto; and Bassignani, Luciano, 4,353,825, Cl. 260-239.100.
Brantingham, George L.; and Wiggins, Richard H., to Texas Instruments Incorporated. Method and apparatus for speech synthesis filter excitation. 4,354,056, Cl. 179-1.0SM.
Brenholt, David L., to Donaldson Company, Inc. Transport vehicle accessory. 4,353,587, Cl. 296-15.000.
Brent, Albert: *See*—
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Breton, Jean-Jacques; and Malicet, Philippe, to Vallourec, Societe Anonyme. Method for manufacture of seamless metal tubing by continuous rolling. 4,353,238, Cl. 72-209.000.
Brice, Ralph E. Ski binding. 4,353,575, Cl. 280-614.000.
Bricmont & Associates, Inc.: *See*—
Bricmont, Francis H., 4,353,690, Cl. 432-234.000.
Bricmont, Francis H., to Bricmont & Associates, Inc. Apparatus to anchor skids for a reheat furnace. 4,353,690, Cl. 432-234.000.
Bridges, Byron K. Vibrating dental tool device and method. 4,353,696, Cl. 433-125.000.
Bridgestone Tire Company, Limited: *See*—
Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.
Brigand, Gerard: *See*—
Kragen, Horst; and Brigand, Gerard, 4,353,805, Cl. 252-8.55D.
Brink, Gerhard: *See*—
Straubel, Max; Konrath, Karl; and Brink, Gerhard, 4,353,340, Cl. 123-365.000.
Bristol, James A.: *See*—
Sircar, Ila; and Bristol, James A., 4,353,905, Cl. 424-250.000.
British Petroleum Company Limited, The: *See*—
Ball, William J.; and Stewart, David G., 4,354,049, Cl. 585-415.000.
British Railways Board: *See*—
Pollard, Maurice G.; and Illingworth, Robert, 4,353,309, Cl. 105-136.000.
Brockhaus, Ernst, to Ed. Scharwachter GmbH & Co. KG. Butt hinge. 4,353,146, Cl. 16-387.000.
Brocklehurst, Charles E., to Opelika Manufacturing Corporation. Sheet production system with hem expander. 4,353,316, Cl. 112-262.300.
Brodie, Edwin T.: *See*—
Burche, Ioan A.; and Brodie, Edwin T., 4,353,402, Cl. 152-209.00R.
Broggi, Renato: *See*—
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Brother Industries, Ltd.: *See*—
Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.
Brothers, Warren S.; and Kallfelz, Albert J., to Carrier Corporation. Heat transfer surface and method of manufacture. 4,353,234, Cl. 72-98.000.
Brouwer, Cornelis, to Rotaque (Proprietary) Limited. Bottom discharge hopper rail car. 4,353,312, Cl. 105-241.200.
Brown, George. Thermostat. 4,353,500, Cl. 236-34.500.
Brown, George. Fusible aquatic device that will override the failure of a defective thermostat or the like within a motor. 4,353,501, Cl. 236-34.500.
Brown, Kenneth G. Cog wheel railway. 4,353,308, Cl. 105-29.00R.
Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., to Hewlett-Packard Company. Transparent digitizer platen. 4,353,952, Cl. 428-201.000.
Brown, Russell L. Impact absorbing handrail and end cap. 4,353,529, Cl. 256-59.000.
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, to BASF Aktiengesellschaft. Cationic dyes. 4,353,833, Cl. 260-386.000.
Bruening, Robert A., to Chicago Bridge & Iron Company. Floating roof metallic shoe secondary seal. 4,353,477, Cl. 220-224.000.
Brunelle, Daniel J., to General Electric Company. Method for removing polyhalogenated hydrocarbons from nonpolar organic solvent solutions. 4,353,793, Cl. 208-262.000.
Brunswick Corporation: *See*—
Neufeld, Henry L., 4,353,514, Cl. 242-84.20A.
Bryant, Cal L.: *See*—
Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., 4,353,199, Cl. 56-10.200.
Bryant, Mark K. Crampon binding. 4,353,172, Cl. 36-7.600.
Buckau-Walther AG: *See*—
Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, 4,353,718, Cl. 55-112.000.
Buckbee-Mears Company: *See*—
Thoms, Roland, 4,353,948, Cl. 428-131.000.
Budliger, Jean-Pierre: *See*—
Arieh, Simon; Budliger, Jean-Pierre; and Courvoisier, Guy, 4,353,551, Cl. 273-73.00R.
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Labyrinth seal. 4,353,359, Cl. 277-53.000.
Buergin, Rodney G.: *See*—
Pearson, Robert J.; and Buergin, Rodney G., 4,353,192, Cl. 52-281.000.
Buettner, Gerhard, to Siemens Aktiengesellschaft. Miniature hearing aid. 4,354,065, Cl. 179-107.00H.

Builders Concrete, Inc.: *See*—
Sluys, Wesley W., 4,353,320, Cl. 114-267.000.
Buky, Gabriel R.: *See*—
Armond, Joseph A.; and Buky, Gabriel R., 4,354,149, Cl. 320-40.000.
Bunker Ramo Corporation: *See*—
Ayer, George E., 4,353,372, Cl. 128-640.000.
Burbank, Max B.: *See*—
Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
Burche, Ioan A.; and Brodie, Edwin T., to Bandag Incorporated. Slitted tire tread. 4,353,402, Cl. 152-209.00R.
Burkett, Howard E.: *See*—
Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., 4,353,436, Cl. 187-9.00R.
Burley, David R.: *See*—
Rickelton, William A.; Robertson, Allan J.; and Burley, David R., 4,353,883, Cl. 423-139.000.
Burns, Alonzo M., Jr.; and Gilbert, Woodrow P., to Milliken Research Corporation. Process for producing sculptured pile fabric. 4,353,706, Cl. 8-114.600.
Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, to United States of America, Air Force. Cursor apparatus for interactive graphic display system. 4,354,102, Cl. 250-201.000.
Burow, Kenneth W., Jr.; and St. Clair, Roger L., to Eli Lilly and Company. Isoxazolylimidazolidinone herbicides. 4,354,030, Cl. 548-247.000.
Burroughs Corporation: *See*—
Mahon, Michael J., 4,354,217, Cl. 361-104.000.
Burton, George W.; and Davis, Eugene F., to Johnsen & Jorgensen (Plastics) Limited. Closures for containers. 4,353,472, Cl. 215-211.000.
Buschfeld, Herbert R., to G. Siempelkamp GmbH & Co. Press plate for platen presses. 4,353,416, Cl. 165-168.000.
Bush, Eric L.: *See*—
Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., 4,353,938, Cl. 427-214.000.
Bussco Engineering, Inc.: *See*—
Deters, Paul M., 4,353,610, Cl. 339-19.000.
Bustin, Franz, to Mobil Oil Corporation. Free-standing thermoplastic bag construction. 4,353,497, Cl. 229-55.000.
Butkin, Vladimir D.: *See*—
Zhukovsky, Alexei A.; Butkin, Vladimir D.; and Kulachek, Mikhail I., 4,354,233, Cl. 364-420.000.
Butler Manufacturing Company: *See*—
Barello, Lawrence J., 4,354,241, Cl. 364-492.000.
Butterfield, Ted; Emory, Lyle J.; and Filicicchia, Daniel, to Spraying Systems Company. Nozzle with pre-orifice metering restriction. 4,353,508, Cl. 239-590.300.
Buzas, Andre. Indolo(2,3-a)quinolizidines, useful in increasing femoral and vertebral blood flow. 4,353,911, Cl. 424-258.000.
Byrd, Philip G. Machine for flattening the internal bead of welded tubing. 4,353,236, Cl. 72-193.000.
C-Thru Aluminum Awning Co.: *See*—
Albany, Stanley J.; and Lizardi, Robert, Jr., 4,354,052, Cl. 174-48.000.
C. Uyemura & Co., Ltd.: *See*—
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,353,933, Cl. 427-8.000.
Cabot Stellite Europe Limited: *See*—
Crook, Paul, 4,353,742, Cl. 75-122.000.
Cacioni, Renato. Combination controlled fluid pressure actuated door lock. 4,353,230, Cl. 70-275.000.
Cadbury Schweppes PLC: *See*—
Jeans, Edward L., 4,353,252, Cl. 73-293.000.
Cagle, Bunyan B. Solid fuel furnace. 4,353,351, Cl. 126-193.000.
Caldwell, Richard L., to Mobil Oil Corporation. Well logging to determine the nature and extent of mud filtrate penetration. 4,353,248, Cl. 73-152.000.
California Institute of Technology: *See*—
Rippel, Wally E.; and Edwards, Dean B., 4,353,969, Cl. 429-144.000.
Callahan, George E. Device for measuring the density of fluids. 4,353,253, Cl. 73-454.000.
Calspan Corporation: *See*—
Schneider, Clayton J., Jr., 4,353,259, Cl. 73-653.000.
Cameron Iron Works, Inc.: *See*—
Miller, Henry W., 4,353,420, Cl. 166-382.000.
Campsey, Ronald L.: *See*—
Richter, Albert P., Jr.; and Campsey, Ronald L., 4,354,110, Cl. 250-358.100.
Canada Cycle and Motor Company Limited: *See*—
Paquet, Benoit, 4,353,173, Cl. 36-44.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
Canon Kabushiki Kaisha: *See*—
Ito, Fumio; Ito, Tadashi; Nakamoto, Soichi; and Isobe, Yasuo, 4,353,630, Cl. 354-29.000.
Knechtel, Wilhelm, 4,353,638, Cl. 355-8.000.
Koyama, Naoki, 4,354,203, Cl. 358-227.000.
Saito, Syuichiro; and Uchidoi, Masanori, 4,353,632, Cl. 354-133.000.
Tokumitsu, Jun; and Minoura, Kazuo, 4,353,617, Cl. 350-6.800.
Canter, Nathan H.; Robbins, Max L.; and Baker, Edward G., to Exxon Research and Engineering Company. Polymer-microemulsion complexes for the enhanced recovery of oil. 4,353,806, Cl. 252-8.55D.
Canup, Travis K.: *See*—
Woerz, Stephen E.; and Canup, Travis K., 4,353,761, Cl. 156-69.000.
Capuano, Italo A.; Carr, Lawrence P.; and Turley, Patricia A., to Olin Corporation. Silver coated particles and a process for preparing them. 4,353,741, Cl. 75-109.000.
Cardarelli, Nathan F.: *See*—
Himel, Chester M.; and Cardarelli, Nathan F., 4,353,962, Cl. 428-407.000.
Carey, Richard D., to Dayco Corporation. Coating method. 4,353,942, Cl. 427-434.300.
Carico, Inc.: *See*—
Carlow, Arthur, 4,353,613, Cl. 339-119.00C.
Carl Still GmbH & Co. KG, Firma: *See*—
Thiersch, Friedrich; and Strobel, Manfred, 4,353,189, Cl. 52-167.000.
Carlow, Arthur, to Carico, Inc. Electrical outlet cord and holder. 4,353,613, Cl. 339-119.00C.
Carlsson, Karl-Johan V.; and Kjoller, Hans O. S., to Telefonaktiebolaget L M Ericsson. Apparatus for reducing the instruction execution time in a computer employing indirect addressing of a data memory. 4,354,231, Cl. 364-200.000.
Carr, Lawrence P.: *See*—
Capuano, Italo A.; Carr, Lawrence P.; and Turley, Patricia A., 4,353,741, Cl. 75-109.000.
Carre, Jean-Jacques; and Riquart, Christian, to Societe Anonyme D.B.A. Braking corrector for double braking circuit. 4,353,599, Cl. 303-22.00R.
Carrier Corporation: *See*—
Brothers, Warren S.; and Kallfelz, Albert J., 4,353,234, Cl. 72-98.000.
Carson, John C.; and Dahlgren, Paul F., to Irvine Sensors Corporation. Detector array module-structure and fabrication. 4,354,107, Cl. 250-239.000.
Carsten, Earl D. Fuel/air metering apparatus. 4,353,848, Cl. 261-69.00R.
Carver, Herman C. Fishing tool to retrieve cables from wells. 4,353,585, Cl. 294-86.100.
Caser, Gustavo, to General Engineering Radcliffe 1979 Limited. Process and plant for vulcanizing a continuous length of curable material. 4,353,861, Cl. 264-561.000.
Casio Computer Co., Ltd.: *See*—
Fujisawa, Hidetaka, 4,354,246, Cl. 364-709.000.
Caslavsky, Vera B.; and Gron, Poul, to Forsyth Dental Infirmary for Children. Fluoride preparations containing surface-active agents. 4,353,892, Cl. 424-52.000.
Caspar, Jean-Pierre: *See*—
Baudouin, Jacques; Caspar, Jean-Pierre; and Gaillard, Jacques, 4,353,751, Cl. 106-306.000.
Castellanos, Rafael. Portable personal ash receiver. 4,353,379, Cl. 131-231.000.
Catterson, Floyd D.: *See*—
Smith, Gary L.; Smith, Delbert E.; Catterson, Floyd D.; and Dooley, Ronald G., 4,353,565, Cl. 280-80.00B.
CECA S.A.: *See*—
Kragen, Horst; and Brigand, Gerard, 4,353,805, Cl. 252-8.55D.
Celotex Corporation, The: *See*—
Kyminas, Stanley C.; Einhaus, Bernard J.; and Hinds, Stephen G., 4,353,949, Cl. 428-195.000.
Centre d'Etude de l'Energie Nucleaire, C.E.N.: *See*—
Leenders, Leon G., 4,353,863, Cl. 376-251.000.
Centro Ricerche Fiat S.p.A.: *See*—
Panagin, Romano, 4,353,313, Cl. 105-397.000.
Centronics Data Computer Corp.: *See*—
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Ceske vysoke uceni technicke: *See*—
Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, 4,353,368, Cl. 128-214.00R.
Chalmers, Bruce: *See*—
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Chandler, Donald A.; and Harper, John W., to S.I.C., Inc. Portable field control unit for emergency telephone communications. 4,354,058, Cl. 179-1.0MN.
Chang, Feng-Chih: *See*—
Ladewig, Glen R.; and Chang, Feng-Chih, 4,354,046, Cl. 568-724.000.
Chang, Mike S. H.; and Edelman, Peter G., to Pitney Bowes Inc. Squarylium dye and diane blue dye charge generating layer mixture for electrophotographic light sensitive elements and processes. 4,353,971, Cl. 430-58.000.
Chapman, Eugene K., to Amca International Corporation. Dies for making thread-forming fasteners. 4,353,233, Cl. 72-88.000.
Chartrand, Joseph A.; and Perreault, Irenee. Gas scrubber. 4,353,845, Cl. 261-3.000.
Chatterjee, Ananda M.: *See*—
Hughes, Patrick M.; Chatterjee, Ananda M.; and Hwo, Charles C., 4,354,004, Cl. 525-240.000.
Chemed Corporation: *See*—
Ebbeler, Robert E., 4,353,745, Cl. 106-2.000.
Chemetron Process Equipment, Inc.: *See*—
Allen, William M.; and Trabue, Gordon C., 4,353,413, Cl. 165-92.000.

Chemische Werke Huls Aktiengesellschaft: *See*—
Wolf, Elmar; and Gras, Rainer, 4,354,014, Cl. 528-45.000.
Cheng, Shang-I. Integrated gasification process. 4,353,713, Cl. 48-202.000.
Cherry Electrical Products Corporation: *See*—
Murmann, Guenter, 4,354,080, Cl. 200-316.000.
Chesley, Gilman D. System for identifying and locating recorded analog information. 4,354,207, Cl. 360-9.100.
Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., to Lucas Industries Limited. Dynamo electric machine brush assembly. 4,354,128, Cl. 310-242.000.
Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, to Hitachi, Ltd. Coating method. 4,353,937, Cl. 427-130.000.
Chiba, Moichi; and Suzuki, Toshio, to Nippon Seiko Kabushiki Kaisha. Roller bearing of the type having a sealing ring capable to forcibly circulate the lubricant. 4,353,605, Cl. 308-187.200.
Chiba, Toshiyuki: *See*—
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
Chicago Bridge & Iron Company: *See*—
Bruening, Robert A., 4,353,477, Cl. 220-224.000.
Chikamura, Takao; Fujiwara, Shinji; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Solid-state image pickup device. 4,354,104, Cl. 250-211.00J.
Chikazumi, Nobutoshi: *See*—
Mukoyama, Yoshiyuki; Chikazumi, Nobutoshi; and Sugitani, Hatuo, 4,353,801, Cl. 210-635.000.
Child, Edward T.: *See*—
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Childs, Michael E., to UOP Inc. Multifunctional gasoline additives. 4,353,711, Cl. 44-63.000.
Chilko, Robert J., to Aluminum Company of America. Apparatus for conveying particulate material by spring expansion and contraction. 4,353,485, Cl. 222-243.000.
Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, to Kawasaki Steel Corporation. Bottom tuyeres in an oxygen top-blown converter. 4,353,533, Cl. 266-265.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A. Synthetic analog of tuftisin. 4,353,823, Cl. 260-112.50R.
Chore-Time Equipment, Inc.: *See*—
Peppler, William, 4,354,098, Cl. 235-98.00B.
Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., to Sperry Corporation. Stone detector for harvesting machines. 4,353,199, Cl. 56-10.200.
Christ, Bruno; and Kesselring, Kurt, to A. Nattermann & Cie GmbH. Process for isolating rosmarinic acid from plants. 4,354,035, Cl. 560-75.000.
Christian, David R.: *See*—
Hoekstra, Gerald B.; and Christian, David R., 4,353,418, Cl. 166-259.000.
Christman, Ross D., to Superpressure, Inc. Pressure limiting device. 4,353,684, Cl. 417-388.000.
Christopher, Donald S.: *See*—
Stock, Arthur J.; and Christopher, Donald S., 4,353,427, Cl. 177-50.000.
Ciba-Geigy AG: *See*—
Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., 4,353,974, Cl. 430-218.000.
Ciba-Geigy Corporation: *See*—
Bickel, Hans; and Kump, Wilhelm, 4,353,826, Cl. 260-239.30P.
Ehrenfreund, Josef, 4,353,925, Cl. 424-322.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,353,735, Cl. 71-105.000.
Goschke, Richard; and Ferrini, Pier G., 4,353,918, Cl. 424-270.000.
Heas, Hans; and Voellmy, Carlo, 4,353,887, Cl. 424-15.000.
Martin, Henry, 4,353,736, Cl. 71-105.000.
Ciciora, John A., to Nelson and Johnson. Power transmission mechanism. 4,353,263, Cl. 74-337.000.
Claeys, Daniel A.: *See*—
Janssens, Wilhelmus; and Claeys, Daniel A., 4,353,975, Cl. 430-239.000.
Clark, Earl A. Stirling cycle engine and fluid pump. 4,353,683, Cl. 417-379.000.
Clark, Gerald L.: *See*—
McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., 4,354,077, Cl. 200-314.000.
Clark, Lee K.; and Peron, Michael C., to Northrop Corporation. Laser telemetry. 4,354,278, Cl. 455-617.000.
Clark, Robin D., to Syntex (U.S.A.) Inc. 9-(Arylalkyl or aroylalkyl)-1-oxa-4,9-diazaspiro(5.5)undecan-3-ones. 4,353,900, Cl. 424-248.540.
Clark, Robin D., to Syntex (U.S.A.) Inc. 9-(1,4-Benzodioxan-2-ylalkyl and hydroxyalkyl)-1-oxa-4,9-diazaspiro[5.5]undecan-3-ones. 4,353,901, Cl. 424-248.570.
Clark, William F. Vapor seal for floating roof tank. 4,353,478, Cl. 220-224.000.
Cleary, Edward N. G., to United States of America, Energy. Primary zone air proportioner. 4,353,205, Cl. 60-39.120.
Cleary, Michael T.; and Kulprathipanja, Santi, to UOP Inc. Process for separating a monoethanoid fatty acid. 4,353,838, Cl. 260-419.000.
Cleary, Michael T.; and Kulprathipanja, Santi, to UOP Inc. Process for separating saturated fatty acids. 4,353,839, Cl. 260-419.000.
Clelford, Douglas H.: *See*—
Murphy, Richard D.; and Clelford, Douglas H., 4,354,230, Cl. 364-200.000.
Clinicon International GmbH: *See*—
Rebbe, Klaus; and Welimann, Klaus, 4,353,374, Cl. 128-686.000.
Clinipad Corporation, The: *See*—
Hunter, Elisa; and Gandy, Susan, 4,353,367, Cl. 128-213.00A.
Clough, David: *See*—
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Clum Manufacturing Co., Inc.: *See*—
Ragen, Robert P., 4,354,069, Cl. 200-16.00R.
Colburn, Theodore R.; and Smith, Bruce M., to United States of America, Health & Human Services. Activity monitor for ambulatory subjects. 4,353,375, Cl. 128-782.000.
Colgate-Palmolive Company: *See*—
Scott, George V., 4,353,890, Cl. 424-49.000.
Collins, David J.: *See*—
Barton, John E.; Collins, David J.; and Headford, Donald W., 4,354,034, Cl. 560-62.000.
Collonia, Harald, to VDO Adolf Schindling A.G. Control of the traveling speed of a motor vehicle. 4,353,339, Cl. 123-350.000.
Colpaert, James J., to Bendix Corporation, The. Actuator assembly for a drum brake having an extendible assembly. 4,353,438, Cl. 188-79.5GC.
Colt Industries Operating Corp.: *See*—
Wakeman, Russell J., 4,353,338, Cl. 123-339.000.
Colville, Hume W. Sawing apparatus. 4,353,275, Cl. 83-488.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., 4,353,882, Cl. 423-111.000.
Communications Satellite Corporation: *See*—
Gupta, Shanti S., 4,354,164, Cl. 331-1.00A.
Compagnie des Lampes: *See*—
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Guezou, Jean; LeDieu, Bernard; and Martin, Jean-Pierre, 4,354,262, Cl. 370-58.000.
Compagnie International Pour l'Informatique: *See*—
Maury, M. Christian, 4,354,208, Cl. 360-40.000.
Compagnie Internationale Pour l'Informatique CII-Honeywell Bull: *See*—
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Computrol Systems, Ltd.: *See*—
Rayment, David J.; and Kruger, Hendrik R., 4,354,099, Cl. 235-449.000.
Comte, Pierre, to Societe d'Exploitation Clairitex. Umbrella locking sleeve. 4,353,659, Cl. 403-24.000.
Conger, David R. L.; Gerson, Ira A.; and White, Richard E., to Motorola, Inc. Programmable multifrequency tone receiver. 4,354,248, Cl. 364-724.000.
Conner, Alvin R.: *See*—
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Glickman, Joel I., 4,353,663, Cl. 403-230.000.
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Nelson, Bennie C., Jr.; and Gardner, Jeffrey M., 4,353,496, Cl. 229-34.00R.
Container Technologies, Inc.: *See*—
Schneiter, John W.; and Hogan, Lawrence R., 4,353,488, Cl. 222-501.000.
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Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,353,898, Cl. 424-238.000.
Coons, Harold E., Jr.: *See*—
Harrell, Robert E.; Harrell, Tedd L.; and Coons, Harold E., Jr., 4,353,647, Cl. 355-85.000.
Cooperman, Michael; and Kapral, Christopher W., to GTE Laboratories Incorporated. Multiplexor with decoding. 4,354,266, Cl. 370-112.000.
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Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., 4,353,995, Cl. 521-125.000.
Corey, Dennis J., to Rexnord Inc. Piloted flexible coupling. 4,353,704, Cl. 464-72.000.
Corkery, Joseph L.: *See*—
Ryan, John O.; and Corkery, Joseph L., 4,354,243, Cl. 364-515.000.
Correa, Flavio D., to Bendix do Brasil Equipamentos Para Autoveiculos LTDA. Brake shoe and brake assembly for automotive vehicles. 4,353,442, Cl. 188-330.000.
Cosden Technology, Inc.: *See*—
Schwarz, Richard, 4,354,005, Cl. 525-257.000.
Cosman, Eric R. Longitudinally, side-biting, bipolar coagulating, surgical instrument. 4,353,371, Cl. 128-303.170.
Coste, Camille: *See*—
Faure, Alain; Maldonado, Paul; Husson, Jean-Francois; and Coste, Camille, 4,353,729, Cl. 71-11.000.
Council of Scientific & Industrial Research: *See*—
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Courvoisier, Guy: *See—*
Arieh, Simon; Budliger, Jean-Pierre; and Courvoisier, Guy, 4,353,551, Cl. 273-73.00R.

Couse, Nancy L.; and King, Jeannette W. Grid for use in counting colonies of bacteria present in discrete areas of a spiral deposition pattern. 4,353,988, Cl. 435-287.000.

Covi, Christian; and Poll, Martin, to D. Swarovski & Co. Process for making single ornament stones coated with heat-activated adhesive. 4,353,755, Cl. 156-212.000.

Cowgill, Charles F. Paint applicator holder. 4,353,476, Cl. 220-85.00D.

Crabtree, Kenneth: *See—*
Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, 4,354,102, Cl. 250-201.000.

Crackel, John E.; and Stieritz, William J., to TRW Inc. Signal acquisition system. 4,354,277, Cl. 455-259.000.

Craft, James A., to International Business Machines Corporation. Ribbon feed mode shift mechanism. 4,353,658, Cl. 400-232.000.

Crain, Stephen F.: *See—*
Tomlinson, Harvard L.; and Crain, Stephen F., 4,353,482, Cl. 222-1.000.

Crawford, Russell C., III. Coffee filter with flow diverter. 4,353,484, Cl. 222-189.000.

Crepin, Roger. Firing turret for a vehicle, and vehicle including such a turret. 4,353,283, Cl. 89-37.00G.

Crook, Paul, to Cabot Stellite Europe Limited. Cobalt-containing alloys. 4,353,742, Cl. 75-122.000.

Crossland, William A.; and Morrissy, Joseph H., to ITT Industries, Inc. Aligning liquid crystal layers. 4,353,943, Cl. 428-1.000.

Crouch, William B.: *See—*
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.

Crumbliss, Robert T., to Spencer Wright Industries, Inc. Method and apparatus for tufting high and low pile in the same row of stitching. 4,353,317, Cl. 112-266.200.

Cser, Gyula; and Spinnler, Fritz, to Autoipari Kutato Intezet. Conduit system for introducing intake gases in internal combustion engines. 4,353,211, Cl. 60-605.000.

Cummins Engine Company, Inc.: *See—*
Sweetland, Roger D., 4,353,332, Cl. 123-41.860.

Curwen, Peter W.; and Dorman, Richard A., to Mechanical Technology Incorporated. Resonant piston compressor having improved stroke control for load-following electric heat pumps and the like. 4,353,220, Cl. 62-228.000.

Cutler-Hammer, Inc.: *See—*
Flickinger, Charles E.; and Born, Richard C., 4,354,226, Cl. 364-200.000.

Cziptschirsch, Kurt, to Gebr. Happich GmbH. Sun visor for vehicles. 4,353,591, Cl. 296-97.00H.

Cziptschirsch, Kurt, to Gebr. Happich GmbH. Sun visor with illuminated mirror. 4,353,592, Cl. 296-97.00B.

D. Gottlieb & Co.: *See—*
Krynski, Edward P., 4,353,553, Cl. 273-121.00R.

D. Swarovski & Co.: *See—*
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Daar, Horst: *See—*
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.

Dahlgren, Paul F.: *See—*
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Daicel Chemical Industries, Ltd.: *See—*
Koga, Kunio; and Kishimoto, Ryoichi, 4,353,784, Cl. 203-16.000.
Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, 4,353,951, Cl. 428-198.000.

Daimler-Benz Aktiengesellschaft: *See—*
Bergmann, Horst; and Reddemann, Jorg, 4,353,344, Cl. 123-569.000.

Daly, James M.: *See—*
Weglin, Walter; and Daly, James M., 4,353,322, Cl. 116-34.00B.

Damke, Otto; and Reutter, Hubert F., to Lohmann GmbH & Co. KG. Spool body for holding a plaster bandage. 4,353,510, Cl. 242-118.320.

Dani, Mahesh J., to Dunmore Corporation. Light and heat reflecting surface. 4,353,766, Cl. 156-233.000.

Daniel, Sam M.: *See—*
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Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.

Daugny, Daniel: *See—*
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Davies, Michael J.: *See—*
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Davies, Robert; Newton, Barrie H.; and Booth, Peter L., to U.S. Philips Corporation. Time-delay-triggered TRAPATT oscillator having delay line with progressively increasing impedance. 4,354,165, Cl. 331-96.000.

Davis, Eugene F.: *See—*
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Davis, James H.: *See—*
Belmonte, Mark S.; Davis, James H.; and Williams, David A., 4,353,391, Cl. 137-565.000.

Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, to International Business Machines Corporation. Loop initialization mechanism for a peer-to-peer communication system. 4,354,229, Cl. 364-200.000.

Davis, Pauls; and Wilson, Joe C., to BASF Wyandotte Corporation. Novel aliphatic sulfosiloxane-silicate copolymers. 4,354,002, Cl. 524-588.000.

Davis, Robert A.: *See—*
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Dayco Corporation: *See—*
Carey, Richard D., 4,353,942, Cl. 427-434.300.

Declerck, Claude: *See—*
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De Domenico, Rodolfo. Method and equipment for the in situ determination of geotechnical parameters of a sandy soil. 4,353,247, Cl. 73-84.000.

Deflandre, Yves: *See—*
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DeFord, Emerson L., to Emerson Musical Instruments Inc. Split E flute and split E mechanism therefor. 4,353,281, Cl. 84-384.000.

Degen, Hans-Juergen: *See—*
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, 4,353,833, Cl. 260-386.000.

de Jager, Jan, to S. C. Johnson & Son, Inc. Electrolytic silver tarnish removal method. 4,353,786, Cl. 204-144.000.

De Labbey, Arnaud: *See—*
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Delcoustal, Jean-Marie: *See—*
Bouygues, Pierre A.; and Delcoustal, Jean-Marie, 4,353,387, Cl. 137-203.000.

Delegue, Francois E., to Thomson-CSF. Cyclic or periodic analog signal processing circuit. 4,354,245, Cl. 364-606.000.

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Bouygues, Pierre A.; and Delcoustal, Jean-Marie, 4,353,387, Cl. 137-203.000.

d'Elloy, Xavier. Nautical propulsion device. 4,353,703, Cl. 440-21.000.

Delta Scan, Inc.: *See—*
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DeMarco, Alexander H. Knee braces. 4,353,362, Cl. 128-80.00C.

Demers, Edward A.: *See—*
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Dempf, Dominik: *See—*
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.

Demuth, Robert; and Wuest, Anton, to Rieter Machine Works Ltd. Flat cleaning system for a card. 4,353,149, Cl. 19-107.000.

Dennison, Marshall T.: *See—*
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Denton, William H.: *See—*
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Denzin, Horst, to Francotyp GmbH. Device for lifting letter flaps. 4,353,773, Cl. 156-442.100.

Deraedt, Roger: *See—*
Teutsch, Jean G.; and Deraedt, Roger, 4,353,899, Cl. 424-243.000.

Dery, Tibor; and Madocsay, Attila. Apparatus for the determination and the digital display of the position of root treating means in the tooth. 4,353,693, Cl. 433-27.000.

Deter, Christhard; Schaller, Wolfgang; Schonfeld, Rudolf; and Haak, Klaus. Input-output device for photographic film materials. 4,353,538, Cl. 271-3.000.

Deters, Paul M., to Bussco Engineering, Inc. Electrical conducting strip. 4,353,610, Cl. 339-19.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Apparatus for producing ensemble tone in an electric musical instrument. 4,353,279, Cl. 84-1.240.

Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Volker, Herbert; and Oser, Polat, 4,353,208, Cl. 60-299.000.

de Vries, Jacob. Infrared heating apparatus for heating web-like material. 4,354,095, Cl. 219-388.000.

Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Amidinoureas. 4,353,842, Cl. 260-465.00D.

Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., to Berlex Laboratories, Inc. Antiarrythmic 1-arylcarbamoylalkyl-2-imidazoline derivatives, composition and method of use. 4,353,921, Cl. 424-273.00R.

Dickenson, Royston J., to General Electric Company. Forward-reverse flow control system for a bypass steam turbine. 4,353,216, Cl. 60-662.000.

Dickinson, William B.: *See—*
Lesher, George Y.; and Dickinson, William B., 4,354,026, Cl. 544-238.000.

DiDomizio, Robert A., Jr., to Honeywell Inc. Rotary valve seal. 4,353,525, Cl. 251-174.000.

Diederen, Willi; Prox, Axel; Reuter, Albert; Roth, Willy; and Schmid, Jochen, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. 6-Hydroxy-2-phenyl-imidazo[4,5-b]pyridines and salts thereof. 4,353,909, Cl. 424-256.000.

Dienemann, Wolfgang, to Bosch-Siemens Hausgerate GmbH. Refrigerator with a large refrigeration chamber cooled by natural convection. 4,353,223, Cl. 62-442.000.

Diepeveen, Matthijs A.: *See*—
Vries, Lodewijk B.; and Diepeveen, Matthijs A., 4,354,269, Cl. 371-43.000.
Dingwall, Andrew G. F., to RCA Corporation. Voltage divider circuits. 4,354,151, Cl. 323-225.000.
Discovision Associates: *See*—
Wilkinson, Richard L., 4,353,767, Cl. 156-245.000.
Dobfar S.p.A.: *See*—
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Dobson Park Industries Limited: *See*—
Ward, Richard, 4,353,426, Cl. 173-119.000.
Docken, Richard E. Rope stretching and tightening device. 4,353,150, Cl. 24-71.100.
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Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.
Doman, Glidden S., to United Technologies Corporation. Wind turbine with yaw trimming. 4,353,681, Cl. 416-11.000.
Donaldson Company, Inc.: *See*—
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Donaldson, G. Edward: *See*—
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Smith, Gary L.; Smith, Delbert E.; Catterson, Floyd D.; and Dooley, Ronald G., 4,353,565, Cl. 280-80.00B.
Doorakian, George A.; Duquette, Lawrence G.; and Bertram, James L., to Dow Chemical Company, The. Phosphonium bicarbonate catalysts for promoting reaction of epoxides with phenols. 4,354,015, Cl. 528-89.000.
Doorakian, George A.: *See*—
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Dorman, Richard A.: *See*—
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Doumaux, Arthur R., Jr.; Downey, James M.; Henry, Joseph P.; and Hurt, John M., to Union Carbide Corporation. Preparation of nitrite esters. 4,353,843, Cl. 260-466.000.
Dover, Virgil L., Jr. Land restoration following oil-well drilling and products useful therefor. 4,353,803, Cl. 210-728.000.
Dow Chemical Company, The: *See*—
Doorakian, George A.; Duquette, Lawrence G.; and Bertram, James L., 4,354,015, Cl. 528-89.000.
Kaiser, Mark E.; and Larson, David L., 4,354,029, Cl. 548-239.000.
Ladewig, Glen R.; and Chang, Feng-Chih, 4,354,046, Cl. 568-724.000.
Martin, John; Doorakian, George A.; and Duquette, Lawrence G., 4,354,028, Cl. 544-374.000.
McFadden, Russell T., 4,353,819, Cl. 523-454.000.
Strege, Paul E.; and Renga, James M., 4,353,831, Cl. 549-229.000.
Strom, Robert M., 4,354,047, Cl. 568-730.000.
Strom, Robert M., 4,354,048, Cl. 568-730.000.
Downey, James M.: *See*—
Doumaux, Arthur R., Jr.; Downey, James M.; Henry, Joseph P.; and Hurt, John M., 4,353,843, Cl. 260-466.000.
Doyen, Joel; and Raisin, Jean P., to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for positioning a supple piece in sheet form on a support surface and handling installation applying said process. 4,353,539, Cl. 271-10.000.
Drake, Miles P.: *See*—
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Driscoll, Neil J. Control station for overhead mounting. 4,354,119, Cl. 307-115.000.
Droux, Jacques, to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull. Magnetic storage medium. 4,354,210, Cl. 360-77.000.
Dryczynski, Kurt; Schadlich, Gunther; and Moraw, Roland, to Hoechst Aktiengesellschaft. Method and apparatus for electrostatically charging a dielectric layer. 4,353,970, Cl. 430-31.000.
DuBois, Grant E., to Dynapol. Rebaudioside analogs. 4,353,889, Cl. 424-48.000.
Du Chateau, Stephane. Construction system for reticulated steel structures. 4,353,662, Cl. 403-171.000.
Duchemin, Michel, to Societe: Ressorts Industrie. Resilient mounting for a rail on its support. 4,353,503, Cl. 238-349.000.
Duck, Peter D.: *See*—
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Dudley, Robert G. Nut cracking apparatus. 4,353,294, Cl. 99-575.000.
Dulberger, Michael D.; Hibner, David H.; and Moringiello, Donald C., to United Technologies Corporation. Viscous/friction damper. 4,353,604, Cl. 308-184.00A.
Dumas, Jean Claude, to Gloria S.A. Heating elements and thermostats for use in the breeding of fish for aquaria. 4,354,096, Cl. 219-523.000.
Dunmore Corporation: *See*—
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Dunn, Wendell E. Chlorine extraction of gold. 4,353,740, Cl. 75-83.000.
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Du Pont de Nemours, E. I., and Company: *See*—
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Kennedy, Stanley P., 4,354,156, Cl. 324-228.000.
Leberzammer, Ernst; and Roos, Leo, 4,353,978, Cl. 430-302.000.
Romanauskas, William A., 4,353,795, Cl. 209-155.000.
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Duquette, Lawrence G.: *See*—
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Martin, John; Doorakian, George A.; and Duquette, Lawrence G., 4,354,028, Cl. 544-374.000.
Duskin Franchise Kabushiki Kaisha: *See*—
Nishiyama, Masanobu; and Kiuchi, Yasuhiro, 4,353,142, Cl. 15-144.00R.
Dykas, George E.: *See*—
Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Hubsch, Gunter; and Stahlmann, Rudolf, 4,353,304, Cl. 102-470.000.
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DuBois, Grant E., 4,353,889, Cl. 424-48.000.
Dynascan Corporation: *See*—
Schornack, Louis W., 4,354,120, Cl. 307-132.00E.
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Moberg, Sigurd M., 4,353,583, Cl. 292-320.000.
Eastman Kodak Company: *See*—
Spaller, Albert E., Jr.; Stockbridge, Bruce W.; and Meredith, Thomas D., Jr., 4,353,492, Cl. 226-11.000.
Wheeler, Richard W., 4,353,973, Cl. 430-216.000.
Eaton, Sargent S., Jr., to Mostek Corporation. High voltage clock generator. 4,354,123, Cl. 307-475.000.
Ebbeler, Robert E., to Chemed Corporation. Cleaner for anti-graffiti system. 4,353,745, Cl. 106-2.000.
Eberlein, Wolfgang: *See*—
Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.
Ebihara, Sakae, to Nissan Motor Company, Ltd. Carburetor. 4,353,345, Cl. 123-575.000.
Ed. Scharwachter GmbH & Co. KG: *See*—
Brockhaus, Ernst, 4,353,146, Cl. 16-387.000.
Edamatu, Michisuke: *See*—
Nakashima, Atushi; Edamatu, Michisuke; and Kushi, Kenji, 4,353,934, Cl. 427-57.000.
Edelman, Peter G.: *See*—
Chang, Mike S. H.; and Edelman, Peter G., 4,353,971, Cl. 430-58.000.
Edison International, Inc.: *See*—
Anderson, Lester M.; and Warnock, John D., 4,353,215, Cl. 60-660.000.
Edwards, Dean B.: *See*—
Rippel, Wally E.; and Edwards, Dean B., 4,353,969, Cl. 429-144.000.
Egret, Jacques: *See*—
Lamy, Jean M.; and Egret, Jacques, 4,353,449, Cl. 192-82.00R.
Ehrenfreund, Josef, to Ciba-Geigy Corporation. Insecticidal N-[4-(3'-haloprop-2'-en-1'-yl)-aminophenyl]-N'-benzoylureas. 4,353,925, Cl. 424-322.000.
Eigemeier, Willi. Door lock with two lock case portions disposed in parallel opposed relationship. 4,353,582, Cl. 292-169.150.
Einhaus, Bernard J.: *See*—
Kyminas, Stanley C.; Einhaus, Bernard J.; and Hinds, Stephen G., 4,353,949, Cl. 428-195.000.
Eisenzimmer, George W., to Goodyear Tire & Rubber Company, The. Hose coupling. 4,353,581, Cl. 285-149.000.
El Paso Polyolefins Company: *See*—
Gardner, Harold F., 4,353,384, Cl. 137-68.00R.
Electricity Council, The: *See*—
Moorey, Ernest J., 4,353,256, Cl. 73-597.000.
Eli Lilly and Company: *See*—
Burow, Kenneth W., Jr.; and St. Clair, Roger L., 4,354,030, Cl. 548-247.000.
Elias, Hans-G.; and Warner, Robert J., to Michigan Molecular Institute. Polyesters of 3-(para-hydroxyphenyl)propionic acid. 4,354,018, Cl. 528-206.000.
Elite Enterprises Inc.: *See*—
Knapp, Gerald W., 4,353,578, Cl. 280-781.000.
Embree, Milton L.; and Garrett, William G., to Bell Telephone Laboratories, Incorporated. Voltage to current converter. 4,354,122, Cl. 307-261.000.

Emerson Musical Instruments Inc.: *See—*
DeFord, Emerson L., 4,353,281, Cl. 84-384.000.
Emerson, Reynolds L. Sigmoidoscope. 4,353,358, Cl. 128-4.000.
Emory, Lyle J.: *See—*
Butterfield, Ted; Emory, Lyle J.; and Filicicchia, Daniel, 4,353,508, Cl. 239-590.300.
Endo, Akira: *See—*
Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, 4,354,191, Cl. 343-7.500.
Endo, Hiroyuki; Ohhira, Hiroshi; and Sasaki, Tohru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Composite and conjugate filaments. 4,353,960, Cl. 428-373.000.
Endo, Mitsushi: *See—*
Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, 4,353,937, Cl. 427-130.000.
Endo, Toshinaga: *See—*
Yamaoka, Sigenori; Kusuhara, Akinobu; and Endo, Toshinaga, 4,353,954, Cl. 428-216.000.
Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Analgesic and antipyretic pharmaceutical compositions containing a benzothiazol-2(3H)-one. 4,353,919, Cl. 424-270.000.
Engelhardt, Gunther: *See—*
Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.
Engl, Ernst, to Messerschmitt-Bolkow-Blohm G.m.b.H. Hot gas valve. 4,353,389, Cl. 137-375.000.
Ennerdal, Leif. Buckle for a safety belt for vehicles. 4,353,151, Cl. 24-230.00A.
Enomoto, Kunio: *See—*
Fukuda, Yoshio; Enomoto, Kunio; and Masumoto, Tsutomu, 4,353,255, Cl. 73-587.000.
ens Bio Logicals Inc.: *See—*
Bender, Robert; and Duck, Peter D., 4,353,989, Cl. 435-287.000.
Environmental Chemicals, Inc.: *See—*
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Eocom Corporation: *See—*
Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., 4,354,196, Cl. 346-108.000.
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Erdolchemie Gesellschaft: *See—*
Muschelknautz, Edgar; and Juse, Rudolf, 4,353,781, Cl. 159-2.00R.
Erickson, Frederick L. Dual-expansion internal combustion engine utilizing an oscillating piston inside an oscillating piston. 4,353,331, Cl. 123-18.00R.
Erikson, Keith W.; and Erikson, Kenneth W. Anti-backlash nut assembly. 4,353,264, Cl. 74-441.000.
Erikson, Kenneth W.: *See—*
Erikson, Keith W.; and Erikson, Kenneth W., 4,353,264, Cl. 74-441.000.
Ernst Leitz Wetzlar GmbH: *See—*
Hagner, Willi; Thaer, Andreas; and Bigar, Francis, 4,353,618, Cl. 350-91.000.
Erwin Sick GmbH Optik-Elektronik: *See—*
Walter, Arthur, 4,354,106, Cl. 250-239.000.
Estkowski, Michael H. Seed marker tabs. 4,353,183, Cl. 47-56.000.
Etablissement Public de Diffusion Dit: Telediffusion de France: *See—*
Sechet, Claude; Babonneau, Gerard; and Guillou, Louis C., 4,354,201, Cl. 358-122.000.
Etablissements Francois Salomon & Fils: *See—*
Salomon, Georges P. J., 4,353,576, Cl. 280-615.000.
Etat Francais represente par le Delegue General pour l'Armement: *See—*
Moreau, Pierre A.; and Sauvestre, Jean C., 4,353,305, Cl. 102-519.000.
Etchison, John O., Jr.; and Jones, Robert H. W., Jr., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Support shelf for printed circuit boards. 4,353,469, Cl. 211-41.000.
Etchison, John O., Jr.; and Jones, Robert H. W., Jr., to Western Electric Company, Inc. Unitary molded plastic connector plug support member. 4,353,614, Cl. 339-125.00R.
Eur-Control M&D, U.S.A., Inc.: *See—*
Miller, Christopher S.; Pope, Daniel F.; and Hokanson, Jon V., 4,354,244, Cl. 364-556.000.
Evans, Aida L. Medicated ear rods and earring construction. 4,353,370, Cl. 128-269.000.
Everede Tool Company: *See—*
Jorgensen, Charles A., 4,353,670, Cl. 408-193.000.
EVG Entwicklungs-und Verwertungsgesellschaft m.b.H: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,353,678, Cl. 414-748.000.
Ewan, George B.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,353,898, Cl. 424-238.000.
Ex-Cell-O Corporation: *See—*
Linquist, Wayne; and Pearson, Vernon, 4,353,164, Cl. 30-360.000.
Exxon Production Research Company: *See—*
Kirby, Robert A., 4,353,431, Cl. 181-118.000.
Exxon Research and Engineering Company: *See—*
Canter, Nathan H.; Robbins, Max L.; and Baker, Edward G., 4,353,806, Cl. 252-8.55D.
Ilnyckyj, Stephen, 4,354,011, Cl. 526-227.000.
Johnson, Jack W.; and Jacobson, Allan J., 4,354,024, Cl. 544-181.000.
F. L. Smidth & Co.: *See—*
Nielsen, Poul W., 4,353,687, Cl. 432-80.000.
F M Machine Company: *See—*
Nagy, Laszlo, 4,353,702, Cl. 440-8.000.
Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, to Synthelabo. 2,3-Dihydro-imidazo[1,2-b]pyridazine derivatives, their preparation and use in treatment of depression. 4,353,903, Cl. 424-250.000.
Fager, Leif-Olof: *See—*
Strom, Johan P.; and Fager, Leif-Olof, 4,353,603, Cl. 308-26.000.
Fairchild Camera & Instr. Corp.: *See—*
Sloane, Edwin A., 4,354,177, Cl. 340-347.0CC.
Fairchild Camera and Instrument Corporation: *See—*
Varshney, Ramesh C.; and Venkateswaran, Kalyanasundaram, 4,354,257, Cl. 365-219.000.
Falciani, Marco; and Broggi, Renato, to Dobfar S.p.A. Cefadroxil acetylcysteinate salt. 4,354,023, Cl. 544-030.000.
Falzoni, Gianluigi, to Fiat Auto S.p.A. Drive transmission unit incorporating expansible-pulley stepless speed changer. 4,353,270, Cl. 74-689.000.
Farber, Horst; Fritze, Heinz; and Seibel, Eberhard, to Walter Sarstedt Kunststoff-Spritzgusswerk. Blood sedimentation device. 4,353,246, Cl. 73-61.400.
Farr, Glyn P. R., to Lucas Industries Limited. Skid sensing means for hydraulic anti-skid braking systems. 4,353,440, Cl. 188-181.00A.
Farrell, Roscoe M.: *See—*
Shields, Harper; and Farrell, Roscoe M., 4,353,227, Cl. 66-146.000.
Shields, Harper; and Farrell, Roscoe M., 4,353,228, Cl. 66-157.000.
Farymann Diesel GmbH: *See—*
Griesheimer, Willi; and Kukulak, Eduard, 4,353,335, Cl. 123-185.00P.
Fataluminium S.p.A.: *See—*
Gaddi, Roberto, 4,353,406, Cl. 164-336.000.
Faulin, Antonio. Ski binding structure. 4,353,574, Cl. 280-613.000.
Faure, Alain; Maldonado, Paul; Husson, Jean-Francois; and Coste, Camille, to Societe Nationale Elf Aquitaine. Plant fertilizing and growth activating structures and applications thereof. 4,353,729, Cl. 71-11.000.
Fay, Victor K., to Itek Corporation. Delay line canceler. 4,354,168, Cl. 333-156.000.
Feichtmayr, Franz: *See—*
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, 4,353,833, Cl. 260-386.000.
Feight, Ingmar: *See—*
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Feiner, Louis F., to U.S. Philips Corporation. Method of and device for determining a nuclear spin density distribution in a part of a body. 4,354,157, Cl. 324-312.000.
Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Heating arrangement for revolving bodies whose diameter varies during production thereof by build-up welding. 4,353,689, Cl. 432-225.000.
Ferrante, Jose. Dosifying containers for granulated products, pulverulent products, etc. 4,353,487, Cl. 222-500.000.
Ferrante, Peter L.: *See—*
Polhemus, Marlan H.; and Ferrante, Peter L., 4,353,470, Cl. 211-126.000.
Ferrini, Pier G.: *See—*
Goschke, Richard; and Ferrini, Pier G., 4,353,918, Cl. 424-270.000.
Ferris Manufacturing Corp.: *See—*
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,353,373, Cl. 128-641.000.
Ferro Corporation: *See—*
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Fiat Auto S.p.A.: *See—*
Falzoni, Gianluigi, 4,353,270, Cl. 74-689.000.
Giugiaro, Giorgetto; and Mantovani, Aldo, 4,353,588, Cl. 296-37.100.
Field, Carl R. Apparatus for repairing and straightening vehicles. 4,353,241, Cl. 72-457.000.
Fife, Alistair A.: *See—*
Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
Filicicchia, Daniel: *See—*
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Fineman, Jonathan P.; and Kieny, Leonard A., Jr., to International Business Machines Corporation. Method of etching polyimide. 4,353,778, Cl. 156-644.000.
Finger, Richard H.: *See—*
Michel, Thomas J.; and Finger, Richard H., 4,354,268, Cl. 371-20.000.
Fink, Allen H., to UOP Inc. Power recovery process using recuperative heat exchange. 4,353,811, Cl. 252-417.000.
Finney, Roy P.; and Lynch, Henry W., to Medical Engineering Corporation. Penile erectile system. 4,353,360, Cl. 128-79.000.
Firth, Donald, to Tosco Corporation. Hydrostatic retort seal. 4,353,558, Cl. 277-30.000.

Fischer, Wolfgang: *See*—
Tellert, Rudy; and Fischer, Wolfgang, 4,354,082, Cl. 219-10.49R.
Fisher, Laren D., to Bally Manufacturing Corporation. Electronic random delay generator for game devices or the like. 4,353,554, Cl. 273-143.00R.
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., to United Technologies Corporation. Chemical milling of high tungsten content superalloys. 4,353,780, Cl. 156-664.000.
Fisli, Tibor S.: *See*—
Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., 4,353,615, Cl. 350-3.710.
Fitz, Forest G., Jr.: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,353,559, Cl. 277-53.000.
Flam, Frederick H. Duplicate bridge scoring system. 4,353,555, Cl. 273-148.00R.
Flanigan, Richard J.; and Boles, Charles L., to Houdaille Industries, Inc. Controlled chip cutterhead for planers and jointers. 4,353,400, Cl. 144-117.00R.
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., to Three Rivers Development Corporation. Radiation and electric current cooking of meat. 4,353,929, Cl. 426-243.000.
Fleck, Mark A.: *See*—
Susnjara, Kenneth J.; and Fleck, Mark A., 4,353,677, Cl. 414-735.000.
Fleischer, Helmut: *See*—
Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, 4,353,272, Cl. 74-859.000.
Flickinger, Charles E.; and Born, Richard C., to Cutler-Hammer, Inc. Communication terminal for interconnecting programmable controllers in a loop. 4,354,226, Cl. 364-200.000.
FMC Corporation: *See*—
Hirahara, Katsuji, 4,353,930, Cl. 426-281.000.
Mumma, Harold J.; and Reed, Michael E., 4,353,455, Cl. 198-384.000.
Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., to Commonwealth Scientific and Industrial Research Organization. Purification of aluminum chloride. 4,353,882, Cl. 423-111.000.
Ford Aerospace & Communications Corporation: *See*—
Kato, David S., 4,354,163, Cl. 330-293.000.
Ford Motor Company: *See*—
Ray, Donald J.; and Woodrich, Kenneth H., 4,353,857, Cl. 264-258.000.
Formica Corporation: *See*—
Hosler, John F.; and White, Paul W., 4,353,686, Cl. 425-83.100.
Forrest Redi-Mix Co.: *See*—
Steidinger, Ronald L., 4,353,328, Cl. 119-20.000.
Forsyth Dental Infirmary for Children: *See*—
Caslavsky, Vera B.; and Gron, Poul, 4,353,892, Cl. 424-52.000.
Forte, Mark R.; and Sonstegard, David A., to Minnesota Mining and Manufacturing Company. Patellar flange and femoral knee-joint prosthesis. 4,353,135, Cl. 3-1.911.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,353,735, Cl. 71-105.000.
Foseco International Limited: *See*—
Batham, John K.; Fox, Alan G.; and Jones, Evan T. R., 4,353,739, Cl. 75-58.000.
Foss, Stephen D., to General Electric Company. Apparatus for removing polychlorinated biphenyls from contaminated transformer dielectric liquid. 4,353,798, Cl. 210-181.000.
Foster, Robert W. Orthotic/prosthetic joint. 4,353,361, Cl. 128-80.00C.
Foster, Thomas R. Snowmobile towbar. 4,353,563, Cl. 280-24.000.
Fouquet, Gerd: *See*—
Merger, Franz; and Fouquet, Gerd, 4,354,045, Cl. 568-487.000.
Fourcade, Jean-Claude. Device controlled by inclination of the head of a driver preventing his falling asleep. 4,354,179, Cl. 340-575.000.
Fox, Alan G.: *See*—
Batham, John K.; Fox, Alan G.; and Jones, Evan T. R., 4,353,739, Cl. 75-58.000.
Fracture Technology, Inc.: *See*—
Wood, Milton D., 4,353,244, Cl. 73-37.000.
Francotyp GmbH: *See*—
Denzin, Horst, 4,353,773, Cl. 156-442.100.
Franke, Albrecht: *See*—
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.
Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,353,904, Cl. 424-250.000.
Franz, John E.; and Kaufman, Robert J., to Monsanto Company. Amide and hydrazide derivatives of N-trifluoroacetyl-N-phosphonomethylglycine. 4,353,731, Cl. 71-88.000.
Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, to Buckau-Walther AG. Electric precipitator. 4,353,718, Cl. 55-112.000.
Freberg, Gerald A., to Inland Manufacturing Company. Pliers for plastic radiator tank replacement. 4,353,273, Cl. 81-425.00R.
Freel, Martin J.: *See*—
Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., 4,353,436, Cl. 187-9.00R.
Fresno Bag Co., Inc.: *See*—
Kandarian, Ernest, 4,353,295, Cl. 100-8.000.
Frey, Wunibald, to Robert Bosch GmbH. Monitoring equipment for the electrical supply system in a motor vehicle. 4,354,182, Cl. 340-650.000.
Frick, John G., Jr.; and Harper, Robert J., Jr., to United States of America, Agriculture. Textile finishing agents from reaction products of carbamates and glutaraldehyde. 4,353,707, Cl. 8-187.000.
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, to BASF Aktiengesellschaft. Amino derivatives of 2-methyl-5-(2-hydroxystyryl)-1,3,4-thiadiazole, their preparation, and formulations containing these compounds. 4,353,917, Cl. 424-270.000.
Fried. KRUPP Gesellschaft mit beschrankter Haftung: *See*—
Janssen, Wilhelm; and Seelig, Henri F., 4,353,534, Cl. 266-270.000.
Fried. Krupp Huttenwerke AG: *See*—
Raquet, Erwin; and Klatt, Richard, 4,353,586, Cl. 295-7.000.
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., to Nanodata Computer Corporation. Intelligent main store for data processing systems. 4,354,225, Cl. 364-200.000.
Fritze, Heinz: *See*—
Farber, Horst; Fritze, Heinz; and Seibel, Eberhard, 4,353,246, Cl. 73-61.400.
Fuhr, Karl: *See*—
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Fuji Electric Co., Ltd.: *See*—
Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, 4,353,217, Cl. 60-693.000.
Fuji Koeki Corporation: *See*—
Takematsu, Yoshiyuki, 4,354,141, Cl. 315-241.00P.
Fuji Photo Film Co., Ltd.: *See*—
Hoshi, Yoshiyuki; and Matsukawa, Hiroharu, 4,353,809, Cl. 252-316.000.
Kogane, Mikio; and Yamazaki, Seiichi, 4,353,645, Cl. 355-75.000.
Maemori, Takashi, 4,353,627, Cl. 353-24.000.
Fujii, Hidetsugu: *See*—
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Fujimoto, Junichi: *See*—
Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.
Fujimoto, Kaoru, to Nihon Nejimawashi Co., Ltd. Hand riveter. 4,353,239, Cl. 72-391.000.
Fujisawa, Hidetaka, to Casio Computer Co., Ltd. Key input indicating tone generating apparatus for small-sized electronic devices. 4,354,246, Cl. 364-709.000.
Fujisawa, Nobuhiko; and Honkawa, Yoshinori, to Ryobi, Limited. Number printing machine for offset press. 4,353,297, Cl. 101-77.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
Fujita, Masao: *See*—
Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, 4,353,530, Cl. 266-45.000.
Fujitsu Limited: *See*—
Hasegawa, Osamu; Yano, Kenji; and Kaneda, Koichi, 4,354,199, Cl. 357-19.000.
Miyasaka, Kiyoshi, 4,354,256, Cl. 365-189.000.
Nozaki, Takao; and Ito, Takashi, 4,353,936, Cl. 427-94.000.
Toyama, Jiro; Takaoka, Hiromi; and Kariya, Kyoji, 4,354,108, Cl. 250-251.000.
Fujiwara, Shinji: *See*—
Chikamura, Takao; Fujiwara, Shinji; and Fukai, Masakazu, 4,354,104, Cl. 250-211.00J.
Fukai, Masakazu: *See*—
Chikamura, Takao; Fujiwara, Shinji; and Fukai, Masakazu, 4,354,104, Cl. 250-211.00J.
Fukuda, Junzo: *See*—
Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.
Fukuda, Yoshio; Enomoto, Kunio; and Masumoto, Tsutomu, to Hitachi, Ltd. Method for determining shape of crack. 4,353,255, Cl. 73-587.000.
Fukunaga, Masao: *See*—
Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.
Fukushima, Kiyoshi: *See*—
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Fukushima, Masakazu: *See*—
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Funabashi, Akira: *See*—
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Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, 4,353,817, Cl. 524-232.000.
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G. Siempelkamp GmbH & Co.: *See—*
Buschfeld, Herbert R., 4,353,416, Cl. 165-168.000.
Gaddi, Roberto, to Fataluminium S.p.A. Metal casting machine. 4,353,406, Cl. 164-336.000.
Gagliani, John; and Lee, Raymond, to International Harvester Company. Structural materials and components. 4,353,998, Cl. 523-219.000.
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Gall, John C., to Sears, Roebuck and Co. Knock-down lamp shade. 4,354,222, Cl. 362-352.000.
Gandy, Susan: *See—*
Hunter, Elisa; and Gandy, Susan, 4,353,367, Cl. 128-213.00A.
Ganster, Charles A.; and Nelson, Gerald V., to Texaco Inc. Feedstock temperature control system. 4,354,242, Cl. 364-501.000.
Garabedian, Armen. Process for making a stress-free plastic article. 4,353,855, Cl. 264-126.000.
Gardner, Harold F., to El Paso Polyolefins Company. High pressure tubular reactor apparatus. 4,353,384, Cl. 137-68.00R.
Gardner, Henry J.: *See—*
Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., 4,353,882, Cl. 423-111.000.
Gardner, James H. Energy storage system for electric utility plant. 4,353,214, Cl. 60-652.000.
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Garrett, Richard H. Turbocharger control valve. 4,353,210, Cl. 60-602.000.
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Embree, Milton L.; and Garrett, William G., 4,354,122, Cl. 307-261.000.
Gasser, Hermann: *See—*
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Gelpey, Jeffrey C.; Marshall, Donald E., Jr.; and White, William J., to Honeywell Inc. Mounting for pyroelectric detecctor arrays. 4,354,109, Cl. 250-349.000.
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Harding, Robert C., 4,354,180, Cl. 340-619.000.
General Binding Corporation: *See—*
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Dickenson, Royston J., 4,353,216, Cl. 60-662.000.
Foss, Stephen D., 4,353,798, Cl. 210-181.000.
Hauser, Ambrose A., 4,353,679, Cl. 415-115.000.
Lee, Minyoung; and Szala, Lawrence E., 4,353,714, Cl. 51-295.000.
Lee, Minyoung; and Szala, Lawrence E., 4,353,963, Cl. 428-408.000.
Mark, Victor, 4,353,830, Cl. 260-326.860.
Morelock, Charles R., 4,353,953, Cl. 428-213.000.
Noeske, Heinz O., 4,354,072, Cl. 200-148.00A.
Olson, Daniel R.; and Goossens, John C., 4,353,959, Cl. 428-331.000.
Olson, Daniel R.; and Goossens, John C., 4,353,965, Cl. 428-412.000.
Reschovsky, John M., 4,354,190, Cl. 340-870.180.
Solomon, Harvey D., 4,353,755, Cl. 148-136.000.
Staats, James E., 4,354,083, Cl. 219-10.55F.
Taylor, William R.; and Gonia, Richard J., 4,353,518, Cl. 248-60.000.
Turnbull, Fred G., 4,354,223, Cl. 363-124.000.
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General Tire & Rubber Company, The: *See—*
Kuan, Tiong H., 4,354,001, Cl. 524-501.000.
Genese, Joseph N.: *See—*
Muetterties, Andrew J.; Genese, Joseph N.; and Seberg, Charles H., 4,353,369, Cl. 128-214.400.
George, Kenneth E., Jr.; and Alexander, Douglas E., to United States Steel Corporation. Pipe welder with improved seam spreader. 4,354,085, Cl. 219-59.100.
Gerber, Arthur M.; Slafer, Warren D.; and Walworth, Vivian K., to Polaroid Corporation. Method for forming a photosensitive silver halide element. 4,353,977, Cl. 430-256.000.
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Spletzer, Barry L., 4,354,181, Cl. 340-642.000.
Gerhart, Fritz: *See—*
Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,353,828, Cl. 260-326.0NS.
Germeraad, Paul B.: *See—*
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Gerson, Ira A.: *See—*
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Gibson Associates Inc.: *See—*
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Gibson, Calvin. Break down dumping cart. 4,353,596, Cl. 298-2.000.
Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Free gusset metal ledger hanger. 4,353,664, Cl. 403-232.100.
Gilbert, Woodrow P.: *See—*
Burns, Alonzo M., Jr.; and Gilbert, Woodrow P., 4,353,706, Cl. 8-114.600.
Gilleo, Kenneth B.; and Kriebich, Willard H., to Northern Engraving Corporation. Method for forming a boss upon a thermoplastic polymer surface and resulting article. 4,353,858, Cl. 264-268.000.
Gilmour, William: *See—*
Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, 4,353,542, Cl. 271-294.000.
Gilovich, Paul A.; and Toreson, James S., to Microcomputer Systems Corporation. Magnetic tape apparatus. 4,354,211, Cl. 360-84.000.
Gimag Aktiengesellschaft: *See—*
Berz, Wolfgang, 4,353,722, Cl. 55-294.000.
Ginggen, Serge, to Tesa S.A. Instrument for measuring linear magnitudes. 4,353,168, Cl. 33-147.00H.
Giordani, Pietro. Adjustable-backrest collapsible stroller. 4,353,577, Cl. 280-642.000.
Girardin, Pierre; and Duplan, Max, to Le Froid Industriel York S.A. High pressure snow gun. 4,353,504, Cl. 239-14.000.
Giugiaro, Giorgetto; and Mantovani, Aldo, to Fiat Auto S.p.A. Object-holding tray for motor vehicles. 4,353,588, Cl. 296-37.100.
Giulie, Joseph D.; and Sabo, Michael K., to General Binding Corporation. Laminating machine with wrinkle prevention system. 4,353,776, Cl. 156-555.000.
Glaxo Group Limited: *See—*
Hallworth, Gerald W.; and Clough, David, 4,353,365, Cl. 128-203.150.
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,353,898, Cl. 424-238.000.
Gleeson, Maurice J. Stiffened elongate support member. 4,353,190, Cl. 52-226.000.
Glickman, Joel I., to Conroy, Inc.; and Magic Mold Corporation. Detachable connector for structural members and method of installation. 4,353,663, Cl. 403-230.000.
Gloria S.A.: *See—*
Dumas, Jean Claude, 4,354,096, Cl. 219-523.000.
Glory Kogyo Kabushiki Kaisha: *See—*
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Gmelin, Karl: *See—*
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MacDonald, Gene W., 4,353,850, Cl. 264-25.000.
Godard, Pierre; and Billot, Michel, to Saft-Societe des Accumulateurs Fixes et de Traction. Method of controlling the heating of a chamber and a controlled chamber-heating installation. 4,353,410, Cl. 165-18.000.
Godfrey, Jack F.; and Grant, Charles L., to Standard Oil Company (Indiana). On-line reclaim method. 4,353,851, Cl. 264-37.000.
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., to Union Carbide Corporation. Catalyst composition for copolymerizing ethylene. 4,354,009, Cl. 526-125.000.
Gold, Marvin H. Spliced high voltage cable. 4,354,053, Cl. 174-84.00R.
Goldberg, Erwin, to Northwestern University. Antigenic linear peptide compounds. 4,353,822, Cl. 260-112.50R.
Goldstein, Ira L., to Mostek Corporation. Analog/digital converter utilizing a single column of analog switches. 4,354,175, Cl. 340-347.0AD.
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Self, James M.; and Schaubel, Charles, 4,353,556, Cl. 273-186.00A.
Gomez, Magdalena U.; and Wicks, Richard W., to Hoffmann-La Roche Inc. Immunochemical assay for creatine kinase-MB isoenzyme. 4,353,982, Cl. 435-7.000.
Gonia, Richard J.: *See—*
Taylor, William R.; and Gonia, Richard J., 4,353,518, Cl. 248-60.000.
Goode, Philip D.; Poole, Michael J.; and Proctor, Gordon W., to United Kingdom Atomic Energy Authority. Ion sources. 4,354,113, Cl. 250-423.00R.
Goodman, Jerome, to United States of America, Navy. Method for constructing a lightweight resistive screen for underwater sound absorption. 4,353,768, Cl. 156-253.000.

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Eisenzimmer, George W., 4,353,581, Cl. 285-149.000.
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Goossens, John C.: *See—*
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Olson, Daniel R.; and Goossens, John C., 4,353,965, Cl. 428-412.000.

Gordon, John H. Method for pressure forming pipe bells. 4,353,860, Cl. 264-519.000.

Goschke, Richard; and Ferrini, Pier G., to Ciba-Geigy Corporation. Dextrorotatory bicyclic thiadiaza compounds and pharmaceutical preparations containing them. 4,353,918, Cl. 424-270.000.

Gotcher, Alan J.; and Germeraad, Paul B., to Raychem Corporation. Shaped article from crosslinked fluorocarbon polymer. 4,353,961, Cl. 428-380.000.

Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H. Mechanism for transferring cut-to-length wires out of a loose bundle of wires into a single layer of parallel wires. 4,353,678, Cl. 414-748.000.

Goupil, Marcel; and Tessier, Leo. Hockey stick. 4,353,549, Cl. 273-67.00A.

Graber, Wolfram G. Frame for electric blanket support. 4,353,140, Cl. 5-505.000.

Granger Associates: *See—*
Werner, William L., 4,354,193, Cl. 343-882.000.

Grant, Charles L.: *See—*
Godfrey, Jack F.; and Grant, Charles L., 4,353,851, Cl. 264-37.000.

Gras, Rainer: *See—*
Wolf, Elmar; and Gras, Rainer, 4,354,014, Cl. 528-45.000.

Grasse, Hans J.: *See—*
Tolasch, Gerhard; and Grasse, Hans J., 4,353,454, Cl. 198-347.000.

Green, Helen. Delineator. 4,353,665, Cl. 404-10.000.

Green, Peter C.; and Block, Jacob, to W. R. Grace & Co. Improved fluid loss control system. 4,353,804, Cl. 252-8.50A.

Greenberg, Sheldon, to Shelcore, Inc. Educational, action-type, amusement center toy. 4,353,701, Cl. 434-259.000.

Greene, Willard B.: *See—*
Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.

Gregory, Brian, to BICC Public Limited Company. Electric cable joints. 4,354,050, Cl. 174-22.00R.

Greiner, Gunter: *See—*
Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.

Gries, Josef: *See—*
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.
Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,353,904, Cl. 424-250.000.

Griesheimer, Willi; and Kukulak, Eduard, to Farymann Diesel GmbH. Hand starting mechanism for an internal combustion engine. 4,353,335, Cl. 123-185.00P.

Grimm, Robert A.: *See—*
Kyung, Jai H.; Grimm, Robert A.; and Holehouse, Joseph G., 4,353,841, Cl. 260-453.00P.

Grimm, Wilhelm G.; and Schindler, Rudolf, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Process for the manufacture of a composite fiber component. 4,353,964, Cl. 428-408.000.

Groeber, Josef, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Apparatus for winding force transmitting elements of fiber reinforced materials. 4,353,772, Cl. 156-433.000.

Gron, Poul: *See—*
Caslavsky, Vera B.; and Gron, Poul, 4,353,892, Cl. 424-52.000.

Groothuis, Hermanus H. H., to U.S. Philips Corporation. Picture display device for displaying a binary signal generated by a picture signal generator as a binary interlaced television picture. 4,354,186, Cl. 340-728.000.

Grothe, Klaus, to Karl Schmidt GmbH. Motor vehicle steering wheel comprising a deformable member. 4,353,266, Cl. 74-552.000.

Grudkowski, Thomas W., to United Technologies Corporation. Carrier concentration controlled surface acoustic wave resonator and oscillator. 4,354,166, Cl. 331-107.00A.

Grunbein, Wolfgang: *See—*
Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.

Grychtol, Klaus: *See—*
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, 4,353,833, Cl. 260-386.000.

GTE Automatic Electric Laboratories, Inc.: *See—*
Lee, Man S., 4,354,250, Cl. 364-802.000.

GTE Laboratories Incorporated: *See—*
Cooperman, Michael; and Kapral, Christopher W., 4,354,266, Cl. 370-112.000.

GTE Products Corporation: *See—*
Quatrini, Lucretia R.; Terlizzi, Marie B.; and Martin, Brice E., 4,353,878, Cl. 423-53.000.
Quatrini, Lucretia R.; and Martin, Brice E., 4,353,879, Cl. 423-53.000.
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Guezou, Jean; LeDieu, Bernard; and Martin, Jean-Pierre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Logic system for controlling a modular multiplex connection unit in a time-division switching exchange. 4,354,262, Cl. 370-58.000.

Guggenheim, Bernhard; and Muhlemann, Hans-Rudolf. Mutanase. 4,353,891, Cl. 424-50.000.

Guillou, Louis C.: *See—*
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Gulf Oil Corporation: *See—*
Hoekstra, Gerald B.; and Christian, David R., 4,353,418, Cl. 166-259.000.

Gulf Research & Development Company: *See—*
Swift, Harold E., 4,353,835, Cl. 260-409.000.

Gupta, Shanti S., to Communications Satellite Corporation. Digital phase lock loop for TIM frequency. 4,354,164, Cl. 331-1.00A.

Gurries, Raymond A., to Resonant Technology Company. Resonantly driven trenching tool. 4,353,175, Cl. 37-101.000.

Guth, Richard U. Ampoule assembly and holder. 4,353,869, Cl. 422-102.000.

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., to Hoffmann-La Roche Inc. Chlorocitric acids. 4,354,039, Cl. 562-582.000.

Gutkin, Peter A.: *See—*
Lowe, George F.; Gutkin, Peter A.; and Wehrenberg, Charles C., 4,354,205, Cl. 358-250.000.

Gyorgy, Ernst M.: *See—*
Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., 4,354,254, Cl. 365-33.000.

Haak, Klaus: *See—*
Deter, Christhard; Schaller, Wolfgang; Schonfeld, Rudolf; and Haak, Klaus, 4,353,538, Cl. 271-3.000.

Haas, Richard M., to Henes Products Corp. Terminal for printed circuit boards. 4,353,609, Cl. 339-17.00C.

Haase, Donald J.; Walker, David G.; and Ostrowski, Paul C., to Tenneco Chemicals, Inc. Use of amine-aluminum chloride adducts as alkylation inhibitors in a ligand-complexing process. 4,353,840, Cl. 260-448.00R.

Habermann, Helmut, to Societe Europeenne de Propulsion. Axial electromagnetic bearing for smooth shafts of large diameter. 4,353,602, Cl. 308-10.000.

Haenen, Henricus W. G.; and Huesken, Robertus S. N. M., to U.S. Philips Corporation. Amplitude modulator circuit for modulating a video signal on a carrier signal. 4,354,200, Cl. 358-23.000.

Hagen, Helmut: *See—*
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.

Hagen, Rolf; Linck, Diethard; and Pappenberger, Joerg, to Siemens Aktiengesellschaft. Circuit arrangement and method for multi-address switching operations. 4,354,261, Cl. 370-42.000.

Hagner, Willi; Thaer, Andreas; and Bigar, Francis, to Ernst Leitz Wetzlar GmbH. Optical arrangement for the reflecting microscopic examination of an object. 4,353,618, Cl. 350-91.000.

Halcon SD Group, Inc., The: *See—*
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Hale, Robert A.: *See—*
Rohrbach, Peter H.; and Hale, Robert A., 4,353,306, Cl. 104-166.000.

Haley, Ernest K., to Lerco Corporation. Airlift. 4,353,457, Cl. 198-774.000.

Haley, Paul E.: *See—*
Stevens, Albert F.; and Haley, Paul E., 4,353,197, Cl. 53-492.000.

Halliburton Company: *See—*
Tomlinson, Harvard L.; and Crain, Stephen F., 4,353,482, Cl. 222-1.000.

Hallworth, Gerald W.; and Clough, David, to Glaxo Group Limited. Device for dispensing medicaments. 4,353,365, Cl. 128-203.150.

Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, to Nissan Motor Company, Limited. Ignition plug for internal combustion engine. 4,354,136, Cl. 313-139.000.

Hamilton, Kenneth W.: *See—*
Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.

Hammann, Ingeborg: *See—*
Stetter, Jorg; Homeyer, Bernhard; and Hammann, Ingeborg, 4,353,915, Cl. 424-269.000.

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Hanna, Marie R.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,354,043, Cl. 568-445.000.

Hannam, Stephen J.; Saynor, John S.; and Watling, Anthony D., to Warwick Chemical Limited. Process for making N,N,N',N'-tetraacetylethylenediamine. 4,354,042, Cl. 564-144.000.

Hansen, Rolf: *See—*
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Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, to Teijin Limited. Semipermeable composite membrane. 4,353,802, Cl. 210-654.000.

Harding, Robert C., to Genelco, Inc. Electro-optical liquid level sensor. 4,354,180, Cl. 340-619.000.

Harlan, Wayne E., to RCA Corporation. Television receiver on-screen alphanumeric display. 4,354,202, Cl. 358-183.000.

Harper, John W.: *See*—
Chandler, Donald A.; and Harper, John W., 4,354,058, Cl. 179-1.0MN.

Harper, Robert J., Jr.: *See*—
Frick, John G., Jr.; and Harper, Robert J., Jr., 4,353,707, Cl. 8-187.000.

Harrell, Robert E.; Harrell, Tedd L.; and Coons, Harold E., Jr., to Western Litho Plate & Supply Company. Apparatus for exposing and conveying photosensitive plates. 4,353,647, Cl. 355-85.000.

Harrell, Tedd L.: *See*—
Harrell, Robert E.; Harrell, Tedd L.; and Coons, Harold E., Jr., 4,353,647, Cl. 355-85.000.

Harris, Joel M.; and Knorr, Fritz J., to University of Utah Research Foundation. Multichannel detection and resolution of chromatographic peaks. 4,353,242, Cl. 73-23.100.

Harris, Richard L., to Harris, Richard L.; and Blader, Ralph W. Multipurpose tool. 4,353,399, Cl. 144-2.00R.

Harrison, Leslie H. R. Visual recognition testing apparatus. 4,353,626, Cl. 351-36.000.

Harshaw Chemical Company, The: *See*—
Mitrofanov, Nicholas; and Lucas, Arthur C., 4,354,135, Cl. 313-93.000.

Hartberg, Bruce L. Air permeable closure assembly. 4,353,589, Cl. 296-50.000.

Harter, James L.; and Biro, Joseph E. Architectural support and service assembly. 4,353,411, Cl. 165-48.00R.

Harzenmoser, Isidor, to Zellweger Uster A.G. Sorting of spinning bodies. 4,353,467, Cl. 209-559.000.

Hasch, Gunter; and Minner, Willy, to Licentia Patent-Verwaltungs-G.m.b.H. H.F. Broadband amplifier. 4,354,161, Cl. 330-254.000.

Hasebe, Morikuni: *See*—
Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, 4,353,817, Cl. 524-232.000.

Hasegawa, Mitsuhiro; Takewa, Hiroyuki; and Yamamoto, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Electro-dynamic speaker. 4,353,432, Cl. 181-166.000.

Hasegawa, Osamu; Yano, Kenji; and Kaneda, Koichi, to Fujitsu Limited. Semiconductor light-emitting device. 4,354,199, Cl. 357-19.000.

Hashimoto, Kenji: *See*—
Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, 4,353,299, Cl. 101-144.000.

Hatachi, Ltd.: *See*—
Oishi, Kazuaki; and Nakano, Seizo, 4,354,220, Cl. 361-341.000.

Hauduc, Jean J., to Societe Anonyme D.B.A. Braking booster servo unit having a fixing bracing member. 4,353,291, Cl. 92-99.000.

Hauni-Werke Korber & Co. KG: *See*—
Tolasch, Gerhard; and Grasse, Hans J., 4,353,454, Cl. 198-347.000.

Hauser, Ambrose A., to General Electric Company. Fluid-cooled element. 4,353,679, Cl. 415-115.000.

Hawkins, Paul M.: *See*—
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Hayashi, Katsurou, to Akihiko Hiroe. Step grate for mechanical stoker with flexible fire grate. 4,353,315, Cl. 110-281.000.

Hayashi, Yuzuru: *See*—
Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.

Hayes, Jerry R., to L. R. Nelson Corporation. Pop-up sprinkler. 4,353,506, Cl. 239-206.000.

Hays, Daniel O., Jr.; Maholick, Andrew W.; and Mize, William N., to International Business Machines Corp. Fixed resource allocation method and apparatus for multiprocessor systems having complementarily phased cycles. 4,354,227, Cl. 364-200.000.

Hazelden, Denis W. J.: *See*—
Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., 4,353,938, Cl. 427-214.000.

Hazemeijer B.V.: *See*—
van der Scheer, Derk, 4,354,215, Cl. 361-63.000.

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Heidman, William A., Jr. Anti-theft door actuated hazard light and horn circuits for automobiles. 4,354,174, Cl. 340-63.000.

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Haas, Richard M., 4,353,609, Cl. 339-17.00C.

Henning, Manfred, to Robert Bosch GmbH. Method and apparatus for varying the spacing of ignition control pulses emitted by an ignition pulse transducer. 4,353,341, Cl. 123-414.000.

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Simons, Gunter, 4,353,763, Cl. 156-184.000.

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Wendle, Jesse G., Jr., 4,353,810, Cl. 252-412.000.

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Bankert, Ralph A., 4,354,006, Cl. 525-359.500.
Maslanka, William W.; and Spence, Gavin G., 4,353,818, Cl. 524-458.000.
McCrossin, Edward G., 4,353,993, Cl. 521-65.000.

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Nuding, Alfred, 4,354,270, Cl. 371-68.000.

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Herm, Jurgen: *See*—
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Herron, Lonnie L. Overdrive unit for automotive vehicle. 4,353,429, Cl. 180-70.0MS.

Hess, Georgia E. Snow removal device with gas burner heating chamber. 4,353,176, Cl. 37-228.000.

Hess, Hans; and Voellmy, Carlo, to Ciba-Geigy Corporation. Divisible tablet having controlled and delayed release of the active substance. 4,353,887, Cl. 424-15.000.

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Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., 4,353,952, Cl. 428-201.000.

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Hickham, John H. Orthodontic headgear traction appliance system. 4,353,691, Cl. 433-5.000.

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Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, 4,354,236, Cl. 364-424.100.

Hiersig, Heinz M., to Mannesmann Aktiengesellschaft. Ship's transmission with changeover from cruising speed to slow speed. 4,353,269, Cl. 74-682.000.

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Nonogaki, Masayuki; Ishii, Katsuya; and Hirasawa, Nobumasa, 4,353,224, Cl. 62-515.000.

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Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, 4,353,730, Cl. 71-29.000.
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Hirayama, Tatsuyuki: *See—*
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Arakawa, Tadao, 4,353,204, Cl. 60-39.020.
Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, 4,353,937, Cl. 427-130.000.
Fukuda, Yoshio; Enomoto, Kunio; and Masumoto, Tsutomu, 4,353,255, Cl. 73-587.000.
Manaka, Toshio; Atago, Takeshi; Ishii, Toshio; and Mouri, Yasunori, 4,354,238, Cl. 364-431.050.
Maruyama, Masanori; Mizushima, Masashi; Fukushima, Masakazu; Miyamoto, Satoru; and Sakai, Hideyuki, 4,354,138, Cl. 313-440.000.
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.
Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, 4,354,191, Cl. 343-7.500.
Mori, Kinji; Ihara, Hirokazu; and Nohmi, Makoto, 4,354,267, Cl. 371-11.000.
Oomori, Hideyuki; Matsuoka, Shinji; and Nakagaki, Mitsuhiro, 4,354,195, Cl. 346-75.000.
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Sato, Tetsuo; and Kominami, Yasuo, 4,354,209, Cl. 360-61.000.
Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.
Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, 4,353,808, Cl. 252-301.40P.
Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, 4,353,727, Cl. 65-36.000.
Warabisako, Terunori; and Shiono, Shigeo, 4,354,115, Cl. 250-551.000.

Hoch, Rene G.: *See—*
Soligny, Marcel R.; Duponchel, Jean-Pierre D. J.; and Hoch, Rene G., 4,353,516, Cl. 244-110.00B.

Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., to International Business Machines Corporation. Zinc-sulphide capping layer for gallium-arsenide device. 4,354,198, Cl. 357-16.000.

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Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, 4,353,939, Cl. 427-238.000.
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Bock, Klaus-Detlef; and Baum, Horst, 4,353,897, Cl. 424-200.000.
Dryczynski, Kurt; Schadlich, Gunther; and Moraw, Roland, 4,353,970, Cl. 430-31.000.
Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.
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Muck, Karl-Friedrich; Post, Lothar; and Westen, Hannes, 4,353,856, Cl. 264-240.000.
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.
Schindler, Peter; and Huber, Gerhard, 4,353,824, Cl. 260-156.000.

Hoefnagels, Johannes F.: *See—*
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Hoekje, Howard H., to PPG Industries, Inc. Titanium diboride article and method for preparing same. 4,353,885, Cl. 423-289.000.

Hoekstra, Gerald B.; and Christian, David R., to Standard Oil Company (Indiana); and Gulf Oil Corporation. In situ retorting of oil shale. 4,353,418, Cl. 166-259.000.

Hoekstra, Ralph W., to Swenson Spreader Company. Control for snowplow blade. 4,353,177, Cl. 37-234.000.

Hoerauf, Werner: *See—*
Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, 4,354,020, Cl. 528-323.000.

Hoffman, Robert K.; and Kavanaugh, Mark A., to Parker-Hannifin Corporation. Pneumatic control valve and circuit. 4,353,290, Cl. 91-461.000.

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Gomez, Magdalena U.; and Wicks, Richard W., 4,353,982, Cl. 435-7.000.
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,354,039, Cl. 562-582.000.
Hunkeler, Walter; and Kyburz, Emilio, 4,353,827, Cl. 260-239.30P.

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Hogan, Lawrence R.: *See—*
Schneiter, John W.; and Hogan, Lawrence R., 4,353,488, Cl. 222-501.000.

Hohman, Charles M.; and Streicher, William L., to Owens-Corning Fiberglas Corporation. Process and apparatus for recycling scrap glass. 4,353,725, Cl. 65-27.000.

Hokanson, Jon V.: *See—*
Miller, Christopher S.; Pope, Daniel F.; and Hokanson, Jon V., 4,354,244, Cl. 364-556.000.

Holehouse, Joseph G.: *See—*
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Hollstein, Elmer J.: *See—*
Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,353,792, Cl. 208-254.00H.

Holt, Herbert H. Method and device for projectile lubrication. 4,353,282, Cl. 86-19.000.

Holthoff, Helmut, to Kocks Technik GmbH & Company. Winding apparatus. 4,353,513, Cl. 242-82.000.

Holub, Heinrich, to Zahnradfabrik Friedrichshafen, AG. Rotary slide steering valve for auxiliary power steerings. 4,353,288, Cl. 91-375.00A.

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Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., 4,354,074, Cl. 200-153.00J.
DiDomizio, Robert A., Jr., 4,353,525, Cl. 251-174.000.
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Honkanen, Erkki J.: *See—*
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Horner, Michael; and Nissen, Axel, to BASF Aktiengesellschaft. 4-(2,5-Dihydroxyphen-1-yl)-crotonic acid and its derivatives, and the preparation of these compounds. 4,353,836, Cl. 260-410.500.

Horner, Patrick J.: *See—*
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Houck, Theodore B. Apparatus for removably attaching a pipe. 4,353,580, Cl. 285-39.000.

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Flanigan, Richard J.; and Boles, Charles L., 4,353,400, Cl. 144-117.00R.

Houghton, William E.: *See—*
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Houston, Robert L., to Owens-Corning Fiberglas Corporation. Method for forming mineral fibers. 4,353,724, Cl. 65-8.000.

Howard, Anthony J.: *See—*
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Hsu, Sheng T., to RCA Corporation. Method of forming self-aligned contact in semiconductor devices. 4,353,159, Cl. 29-571.000.

Huber, Gerhard: *See—*
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Hubsch, Gunter; and Stahlmann, Rudolf, to Dynamit Nobel Aktiengesellschaft. Propellant charge igniter. 4,353,304, Cl. 102-470.000.
Huesken, Robertus S. N. M.: *See—*
Haenen, Henricus W. G.; and Huesken, Robertus S. N. M., 4,354,200, Cl. 358-23.000.
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Hughes, John B., to U.S. Philips Corporation. Digital signal transmission system. 4,354,274, Cl. 375-120.000.
Hughes, Patrick M.; Chatterjee, Ananda M.; and Hwo, Charles C., to Shell Oil Company. Film compositions from olefin polymer blends. 4,354,004, Cl. 525-240.000.
Hughes, Sarah Y.: *See—*
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Hukki, Jaakko J.: *See—*
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Hungerford, Gordon P., to Mobil Oil Corporation. Multilayer polyacrylonitrile film. 4,353,967, Cl. 428-520.000.
Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Diazepine derivatives. 4,353,827, Cl. 260-239.30P.
Hunter, David O., to Westinghouse Electric Corp. Compound angle wedges for coupling ultrasound into a curved surface object. 4,353,258, Cl. 73-644.000.
Hunter, Elisa; and Gandy, Susan, to Clinipad Corporation, The. Container for sterilizing a flexible tube. 4,353,367, Cl. 128-213.00A.
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Doumaux, Arthur R., Jr.; Downey, James M.; Henry, Joseph P.; and Hurt, John M., 4,353,843, Cl. 260-466.000.
Husslein, Julius; and Klement, Johann, to Bosch Siemens Hausgerate GmbH. Twin baking oven, particularly built-in baking oven. 4,354,084, Cl. 219-10.55R.
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Hutchinson, William; and Wermelt, Klaus L. P., to Wildt Mellor Bromley Limited. Weft knitted fabric. 4,353,229, Cl. 66-197.000.
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I.W.S. Nominee Company Limited: *See—*
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Ichihashi, Yoshinobu: *See—*
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Icoma Packtechnik GmbH: *See—*
Kuckhermann, Gustav, 4,353,770, Cl. 156-308.400.
Ieki, Hideharu, to Murata Manufacturing Co., Ltd. Absorber for piezoelectric surface acoustic wave device. 4,354,129, Cl. 310-313.00C.
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Iio, Toshimitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Two cycle engine with augmented intake ports. 4,353,333, Cl. 123-73.00R.
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Illy, Ernesto. Coffee machine. 4,353,293, Cl. 99-283.000.
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Immink, Kornelis A.; Bierhoff, Martinus P. M.; and Heemskerk, Jacobus P. J., to U.S. Philips Corporation. Optical focusing device with two controls. 4,354,103, Cl. 250-201.000.
Imperial Chemical Industries Limited: *See—*
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Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,353,746, Cl. 106-89.000.
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Rashbrook, Robert B.; and Horner, Patrick J., 4,354,016, Cl. 528-128.000.
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Freberg, Gerald A., 4,353,273, Cl. 81-425.00R.
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Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.
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Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
Barteck, Joseph C., 4,354,194, Cl. 346-75.000.
Craft, James A., 4,353,658, Cl. 400-232.000.
Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, 4,354,229, Cl. 364-200.000.
Fineman, Jonathan P.; and Kieny, Leonard A., Jr., 4,353,778, Cl. 156-644.000.
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Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.
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Rohen, James E., 4,354,100, Cl. 235-449.000.
Schaefer, John O., 4,353,657, Cl. 400-208.000.
Zimmerman, Lee T., 4,353,653, Cl. 400-70.000.
International Flavors & Fragrances Inc.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,354,043, Cl. 568-445.000.
International Harvester Company: *See—*
Gagliani, John; and Lee, Raymond, 4,353,998, Cl. 523-219.000.
Northcutt, Charles D., 4,353,947, Cl. 428-116.000.
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Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., 4,353,938, Cl. 427-214.000.
Wurst, Walter K., 4,354,264, Cl. 370-110.000.
INTEROX (Societe Anonyme): *See—*
Lecloux, Andre; Declerck, Claude; and Legrand, Franz, 4,353,832, Cl. 549-272.000.
Inukai, Yukio: *See—*
Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.
Inventive Technology International, Inc.: *See—*
McSpadden, John T., 4,353,698, Cl. 433-164.000.
IRT Corporation: *See—*
Lukens, Herbert R., Jr.; and Williams, Colin B., 4,353,886, Cl. 424-1.000.
Irvine Sensors Corporation: *See—*
Carson, John C.; and Dahlgren, Paul F., 4,354,107, Cl. 250-239.000.
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Ishii, Katsuya: *See—*
Nonogaki, Masayuki; Ishii, Katsuya; and Hirasawa, Nobumasa, 4,353,224, Cl. 62-515.000.
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Ishii, Shinzo: *See—*
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.
Ishii, Toshio: *See—*
Manaka, Toshio; Atago, Takeshi; Ishii, Toshio; and Mouri, Yasunori, 4,354,238, Cl. 364-431.050.
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Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, 4,353,397, Cl. 139-435.000.
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Ito, Fumio; Ito, Tadashi; Nakamoto, Soichi; and Isobe, Yasuo, 4,353,630, Cl. 354-29.000.
Isoyama, Mitsunori; Takeda, Susumu; and Nakai, Masatoshi, to Kubota, Ltd. Butterfly valve. 4,353,388, Cl. 137-240.000.
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Fay, Victor K., 4,354,168, Cl. 333-156.000.
Itikawa, Katuji: *See*—
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Ito, Takashi: *See*—
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Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.
ITT Industries, Inc.: *See*—
Crossland, William A.; and Morrissy, Joseph H., 4,353,943, Cl. 428-1.000.
Weiler, Rolf, 4,353,287, Cl. 91-369.00A.
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Suzuki, Hajime; and Iwano, Yoshimi, 4,353,396, Cl. 139-54.000.
Iwasa, Yamahiro, to Asahi Chemical Research Laboratory Co., Ltd. Power conductive coating mixed with copper powder. 4,353,816, Cl. 252-512.000.
Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, to Nippon Mining Company Limited. Method and apparatus for automatically punching the tuyeres of a converter. 4,353,330, Cl. 266-45.000.
J. R. Wauford and Company, Consulting Engineers, Inc.: *See*—
Spears, A. Barry, 4,353,171, Cl. 33-174.00G.
Spears, A. Barry, 4,353,251, Cl. 73-215.000.
Jackson, W. Shaun; and Bohm, Leslie E. Pannier mounting system for cycles. 4,353,490, Cl. 224-32.00A.
Jacob, Adir, to LFE Corporation. Selective plasma polysilicon etching. 4,353,777, Cl. 156-643.000.
Jacobsen, Kjell O., to A/S Raufoss Ammunisjonsfabrikker. Smoke grenade. 4,353,301, Cl. 102-334.000.
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Johnson, Jack W.; and Jacobson, Allan J., 4,354,024, Cl. 544-181.000.
Jammet, Pierre. Toilet seat. 4,353,137, Cl. 4-237.000.
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Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,353,792, Cl. 208-254.00H.
Janssen, Johannes H. H., to U.S. Philips Corporation. Electronically commutating motor. 4,354,145, Cl. 318-254.000.
Janssen, Lambert R. Electrodynamic balance for a detection. 4,354,178, Cl. 340-572.000.
Janssen, Wilhelm; and Seelig, Henri F., to Fried. KRUPP Gesellschaft mit beschrankter Haftung. Apparatus for supplying gas to a revolving cylindrical furnace. 4,353,534, Cl. 266-270.000.
Janssens, Wilhelmus; and Claeys, Daniel A., to Agfa-Gevaert, N.V. Dye-diffusion transfer process. 4,353,975, Cl. 430-239.000.
Jansson, Hadar J. E. Large open carrier with a foldable cargo supporting wall. 4,353,520, Cl. 248-346.000.
Jantzen, Steven L., to ACF Industries, Incorporated. Cushioned railway car center plate assembly. 4,353,310, Cl. 105-199.00C.
Jantzen, Steven L., to ACF Industries, Incorporated. Railway car center plate assembly. 4,353,311, Cl. 105-199.00C.
Japan Carlit Co., Ltd., The: *See*—
Kanai, Hideo; Shinagawa, Akihiro; Yamazaki, Takahiko; and Itai, Reiichi, 4,353,790, Cl. 204-290.00F.
Jay, Dudley W. Aluminum melting furnace. 4,353,532, Cl. 266-242.000.
Jay-El Products Incorporated: *See*—
McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., 4,354,077, Cl. 200-314.000.
Jeans, Edward L., to Cadbury Schweppes PLC. Liquid level sensor. 4,353,252, Cl. 73-293.000.
Jeffrey, Frank R.; and Shanks, Howard R., to United States of America, Energy. RF Sputtering for preparing substantially pure amorphous silicon monohydride. 4,353,788, Cl. 204-192.00S.
Jenkins, Merrill M. E., Sr.: *See*—
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,353,929, Cl. 426-243.000.
Jenkins, Oliver J., Jr.; and Mayfield, Charles W., to Youngstown Steel Door Company, The. Door repair method and repair section therefor. 4,353,187, Cl. 49-501.000.
Jenkinson, Charles. Exercising apparatus. 4,353,547, Cl. 272-130.000.
Jennings, Hugh F. Rotatable sign. 4,353,179, Cl. 40-479.000.
Jerr-Dan Corporation: *See*—
Shoup, Gary L., 4,353,597, Cl. 298-12.000.
Jes, Otto J., to Willamette Industries, Inc. Asparagus carton. 4,353,495, Cl. 229-16.00R.
Jeslis, Jerome: *See*—
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,353,373, Cl. 128-641.000.
Johannesen, Donald D.: *See*—
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Johnsen & Jorgensen (Plastics) Limited: *See*—
Burton, George W.; and Davis, Eugene F., 4,353,472, Cl. 215-211.000.
Johnson, Burton R. Three dimensional educational toy model subdivision. 4,353,699, Cl. 434-72.000.
Johnson, Jack W.; and Jacobson, Allan J., to Exxon Research and Engineering Company. Tungsten trioxide layered compounds. 4,354,024, Cl. 544-181.000.
Johnson & Johnson: *See*—
Sampson, Arthur J., 4,353,945, Cl. 428-90.000.
Johnson & Johnson Baby Products Company: *See*—
Passafiume, Anthony, 4,353,491, Cl. 225-3.000.
Jones, Evan T. R.: *See*—
Batham, John K.; Fox, Alan G.; and Jones, Evan T. R., 4,353,739, Cl. 75-58.000.
Jones, James J., to Texas Instruments Incorporated. Vehicle skid control. 4,353,601, Cl. 303-106.000.
Jones, Robert H. W., Jr.: *See*—
Etchison, John O., Jr.; and Jones, Robert H. W., Jr., 4,353,469, Cl. 211-41.000.
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Jordan, Armin, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for positioning a workpiece. 4,353,170, Cl. 33-174.0TA.
Jorgensen, Charles A., to Everede Tool Company. Machining tool. 4,353,670, Cl. 408-193.000.
Jorgensen, Donald R.: *See*—
Moore, William H.; and Jorgensen, Donald R., 4,353,651, Cl. 366-2.000.
Josefsson, Kjell S.: *See*—
Nyberg, Karl F. L.; and Josefsson, Kjell S., 4,354,265, Cl. 370-111.000.
Joseloff, Stanley. Supermarket counter construction and method of using same. 4,353,564, Cl. 280-79.300.
Jos. Schneider & Co. Optische Werke Kreuznach: *See*—
Himmelsbach, Paul, 4,353,634, Cl. 354-195.000.
Joslin, Joel A.; and Dennison, Marshall T., to Sherwood Medical Industries Inc. Specimen collecting device. 4,353,868, Cl. 422-101.000.
Judd, Ian D., to International Business Machines Corporation. Equipment to correct aberrations of a cathode ray beam. 4,354,143, Cl. 315-368.000.
Junkas, Ronald J.; and Kyes, Robert W. Fishing box. 4,353,182, Cl. 43-54.50R.
Juse, Rudolf: *See*—
Muschelknautz, Edgar; and Juse, Rudolf, 4,353,781, Cl. 159-2.00R.
Kabushiki Kaisha Daini Seikosha: *See*—
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Kabushiki Kaisha Kyoto Daiichi Kagaku: *See*—
Yamada, Shigeki; and Yamamoto, Takao, 4,353,984, Cl. 435-14.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
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Kabushiki Kaisha Suwa Seikosha: *See*—
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Kachur, Nicholas W.; and Tomburo, Anthony F., to Gibson Associates Inc. Safety closure device. 4,353,475, Cl. 215-223.000.
Kah, Carl L. C., Jr. Scribbler head. 4,353,507, Cl. 239-240.000.
Kahn & Kahn Plastics (Proprietary) Limited: *See*—
Kahn, Richard D., 4,353,460, Cl. 206-3.000.
Kahn, Richard D., to Kahn & Kahn Plastics (Proprietary) Limited. Pouch for arms and ammunition. 4,353,460, Cl. 206-3.000.
Kaila, Juhani O. W.; Honkanen, Erkki J.; Alberty, Joachim E.; and Hukki, Jaakko J., to Orion-yhtyma Oy. Antitussive anilides. 4,353,914, Cl. 424-267.000.
Kaiser, Fritz: *See*—
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Kaiser, Mark E.; and Larson, David L., to Dow Chemical Company, The. Preparation of 2-substituted-2-oxazolines with organic zinc salt catalysts. 4,354,029, Cl. 548-239.000.
Kaiser Steel Corporation: *See*—
Williamson, Calvin C., 4,353,235, Cl. 72-130.000.
Kaji, Kiyokane, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sensor with cross-base mounting plate. 4,354,131, Cl. 310-328.000.
Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, to Bridgestone Tire Company, Limited. Golf ball. 4,353,557, Cl. 273-227.000.
Kajitani, Ikuo: *See*—
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Kakitani, Yohtaro: *See*—
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Kalberer, Heinz: *See*—
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Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, 4,353,940, Cl. 427-238.000.
Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, to Mobil Tyco Solar Energy Corporation. Displaced capillary dies. 4,353,757, Cl. 148-172.000.
Kallfelz, Albert J.: *See*—
Brothers, Warren S.; and Kallfelz, Albert J., 4,353,234, Cl. 72-98.000.
Kaman Aerospace Corporation: *See*—
Kaman, Charles W., II, 4,353,862, Cl. 264-571.000.
Kaman, Charles W., II, to Kaman Aerospace Corporation. Method for making sound board. 4,353,862, Cl. 264-571.000.
Kaminaka, Nobuyuki: *See*—
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Kanai, Hideo; Shinagawa, Akihiro; Yamazaki, Takahiko; and Itai, Reiichi, to Japan Carlit Co., Ltd., The. Insoluble anode for generating oxygen and process for producing the same. 4,353,790, Cl. 204-290.00F.
Kanai, Kenji: *See*—
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,354,212, Cl. 360-113.000.
Kanazawa, Kuniyoshi. Oil brake device for use in bicycles. 4,353,570, Cl. 280-283.000.
Kandarian, Ernest, to Fresno Bag Co., Inc., a part interest. Wire tying fixture. 4,353,295, Cl. 100-8.000.
Kane, James: *See*—
Gale, Michael T.; and Kane, James, 4,353,622, Cl. 350-162.0SF.
Kaneda, Koichi: *See*—
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Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Fuel injection control system for an internal combustion engine. 4,354,239, Cl. 364-431.050.
Kaneko, Kazuyoshi; and Suzuki, Katsumi, to Kabushiki Kaisha Morita Seisakusho; and Kazuyoshi Kaneko. Headrest control device for a treatment chair. 4,353,595, Cl. 297-408.000.
Kaneko, Makoto: *See*—
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Kaneko, Noboru: *See*—
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Kaneko, Tamaki: *See*—
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Karabinis, Peter D., to Bell Telephone Laboratories, Incorporated. Equalizing signal combiner. 4,354,276, Cl. 455-139.000.
Karayannis, Nicholas M.; and Skryantz, John S., to Standard Oil Company (Indiana). Catalyst for polymerization of alpha-olefins. 4,353,813, Cl. 252-429.00B.
Kariya, Kyoji: *See*—
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Karl Schmidt GmbH: *See*—
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Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V. Apparatus for investigation of fluorescence characteristics of microscopic objects. 4,354,114, Cl. 250-458.100.
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Karpenko, Anatole N., to Anchor/Darling Valve Company. Swing check valve with internally balanced disc. 4,353,390, Cl. 137-527.800.
Karrakussoglu, Stefanos. Orthodontic appliance. 4,353,692, Cl. 433-16.000.
Kasai, Masaji: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.
Kashkai, Chingiz M. O. Gas-liquid analyzer. 4,353,789, Cl. 204-195.00R.
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Kato, David S., to Ford Aerospace & Communications Corporation. High voltage buffer amplifier. 4,354,163, Cl. 330-293.000.
Kato, Masayuki: *See*—
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
Kato, Yoshiki: *See*—
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Katz, Lawrence E.; and Gay, Walter A., to Olin Corporation. Selected 2-trichloromethyl-4-pyrimidinyl carbonates and their use as fungicides. 4,353,908, Cl. 424-251.000.
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Kawasaki Steel Corporation: *See*—
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Shields, Harper; and Farrell, Roscoe M., 4,353,228, Cl. 66-157.000.
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Kefalas A/S: *See*—
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Keller Companies, Inc.: *See*—
Keller, Robert R., 4,353,353, Cl. 126-429.000.
Keller, Robert R., to Keller Companies, Inc. Low temperature solar furnace and method. 4,353,353, Cl. 126-429.000.
Keller, Wolfgang; and Weiss, Wolfgang, to Bayer Aktiengeselischaft. Rotary tube reactor for the thermal treatment of material. 4,353,874, Cl. 422-193.000.
Kelly, Joseph B.: *See*—
Slabach, John C., Jr.; and Kelly, Joseph B., 4,353,728, Cl. 65-273.000.
Kendall, Kevin: *See*—
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Birchall, James D.; and Kendall, Kevin, 4,353,747, Cl. 106-89.000.
Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,353,748, Cl. 106-89.000.
Kennedy, Alvin B., Jr. Drilling fluid gas and solids removal system. 4,353,719, Cl. 55-170.000.
Kennedy, Stanley P., to Du Pont de Nemours, E. I., and Company. Device for detecting ferromagnetic materials. 4,354,156, Cl. 324-228.000.
Kentrox Industries, Inc.: *See*—
Pierce, Lyle R., 4,354,160, Cl. 330-107.000.
Keogh, Michael J., to Union Carbide Corporation. Compositions based on water-curable, silane modified copolymers of alkylene-alkyl acrylates. 4,353,997, Cl. 523-210.000.
Kep Enterprises: *See*—
Poggemiller, Erhard; and Sweet, Ralph, 4,353,423, Cl. 172-260.500.
Kesselring, Kurt: *See*—
Christ, Bruno; and Kesselring, Kurt, 4,354,035, Cl. 560-75.000.
Kettlestrings, John S. Toy-like instrument for drawing circles. 4,353,166, Cl. 33-27.00C.
Kieny, Leonard A., Jr.: *See*—
Fineman, Jonathan P.; and Kieny, Leonard A., Jr., 4,353,778, Cl. 156-644.000.
Kienzle Apparate GmbH: *See*—
Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.
Kierstead, Richard W.: *See*—
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,354,039, Cl. 562-582.000.
Kiesel, Donald F. Seismically actuated valve release structure. 4,353,383, Cl. 137-45.000.

Kikuchi, Hideo: *See*—
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.

Kimura, Hiroshi, to Toshiba Silicone Co., Ltd. Process for preparing epoxy-modified silicone resins. 4,354,013, Cl. 528-16.000.

Kimura, Kenji. Automatic focusing control device. 4,354,204, Cl. 358-227.000.

Kinder, Leon. Spraying apparatus. 4,353,505, Cl. 239-167.000.

King, Jeannette W.: *See*—
Couse, Nancy L.; and King, Jeannette W., 4,353,988, Cl. 435-287.000.

King, Thomas M.; and Daniel, Sam M., to Motorola Inc. Processing unit for multiplying two mathematical quantities including at least one complex multiplier. 4,354,249, Cl. 364-754.000.

Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, to Toyo Engineering Corporation; and Mitsui Toatsu Chemicals, Incorporated. Granulating process. 4,353,730, Cl. 71-29.000.

Kirby, Robert A., to Exxon Production Research Company. Recoil reducing system for gas guns. 4,353,431, Cl. 181-118.000.

Kishii, Toru, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for surface stress measurement of glass coating and transparent plastic product. 4,353,649, Cl. 356-33.000.

Kishimoto, Ryoichi: *See*—
Koga, Kunio; and Kishimoto, Ryoichi, 4,353,784, Cl. 203-16.000.

Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, to Narumi China Corporation; and Kao Soap Co., Ltd. Green ceramic tapes and method of producing them. 4,353,958, Cl. 428-329.000.

Kitamura, Satoru: *See*—
Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, 4,353,397, Cl. 139-435.000.

Kitasato Kenkyusho: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.

Kiuchi, Yasuhiro: *See*—
Nishiyama, Masanobu; and Kiuchi, Yasuhiro, 4,353,142, Cl. 15-144.00R.

Kizawa, Yoshihiro: *See*—
Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, 4,353,217, Cl. 60-693.000.

Kjoller, Hans O. S.: *See*—
Carlsson, Karl-Johan V.; and Kjoller, Hans O. S., 4,354,231, Cl. 364-200.000.

Klaschka, John T.; and Davies, Michael J., to United Kingdom Atomic Energy Authority. Heat pipes and thermal siphons. 4,353,415, Cl. 165-104.210.

Klatt, Richard: *See*—
Raquet, Erwin; and Klatt, Richard, 4,353,586, Cl. 295-7.000.

Klaussner, Hans-Jurgen. Drive and control arrangement for a mechanical eccentric press. 4,354,147, Cl. 318-363.000.

Klement, Johann: *See*—
Husslein, Julius; and Klement, Johann, 4,354,084, Cl. 219-10.55R.

Kline, Mark H.: *See*—
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.

Klingamon, Lon C. Portable hand stamp storage and display device. 4,353,468, Cl. 211-39.000.

Klingberg, Peter: *See*—
Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, 4,353,718, Cl. 55-112.000.

Knaack, Karl: *See*—
Bitsch, Harald; and Knaack, Karl, 4,353,606, Cl. 308-189.00R.

Knapp, Gerald W., to Elite Enterprises Inc. Automobile frame conversion unit. 4,353,578, Cl. 280-781.000.

Knechtel, Wilhelm, to Canon Kabushiki Kaisha. Copying apparatus. 4,353,638, Cl. 355-8.000.

Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, to Xerox Corporation. Sheet collection apparatus and sorters incorporating same. 4,353,542, Cl. 271-294.000.

Knight, William R.: *See*—
Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.

Knorr, Fritz J.: *See*—
Harris, Joel M.; and Knorr, Fritz J., 4,353,242, Cl. 73-23.100.

Kobayashi, Masakazu, to Kyowa Vacuum Engineering, Ltd. Vacuum apparatus. 4,353,222, Cl. 62-268.000.

Kobayashi, Masakazu: *See*—
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.

Koblenzer, Heinz, to Langbein-Pfanhauser Werke AG. Apparatus for the treating of articles. 4,353,323, Cl. 118-61.000.

Koch, George R.: *See*—
Williams, Norman; and Koch, George R., 4,354,111, Cl. 250-396.00R.

Koch, Klaus: *See*—
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, 4,353,895, Cl. 424-182.000.

Koch, Siegfried: *See*—
Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.

Kocher, Hans H.: *See*—
Stockel, Dieter; and Kocher, Hans H., 4,354,075, Cl. 200-262.000.

Kocks Technik GmbH & Company: *See*—
Holthoff, Helmut, 4,353,513, Cl. 242-82.000.

Koehring Company, The: *See*—
Salani, Chittaranjan, 4,353,261, Cl. 74-87.000.

Kofink, Wolfgang, to Robert Bosch GmbH. Electrical generator. 4,354,150, Cl. 322-63.000.

Koga, Kunio; and Kishimoto, Ryoichi, to Daicel Chemical Industries, Ltd. Method of recovery of acetic acid. 4,353,784, Cl. 203-16.000.

Kogane, Mikio; and Yamazaki, Seiichi, to Fuji Photo Film Co., Ltd. Negative film carrier. 4,353,645, Cl. 355-75.000.

Kohler, Hans W., to United States of America, Army. Radio ranging. 4,354,192, Cl. 343-14.000.

Koide, Hiroshi: *See*—
Tenmyo, Shigemoto; and Koide, Hiroshi, 4,354,146, Cl. 318-341.000.

Kojima, Hiroaki, to Minolta Camera Kabushiki Kaisha. Device for cleaning optical fiber tube incorporated in image forming apparatus. 4,353,636, Cl. 355-1.000.

Kolakowski, Thomas A.; and Vishnevsky, Constantine, to TRW Inc. Casting method. 4,353,405, Cl. 164-122.200.

Kolar, Max: *See*—
Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.

Kolibas, James A., to Nordson Corporation. Apparatus for the stripping of the inside seam of a can body moving at a high speed. 4,353,326, Cl. 118-696.000.

Kolkmann, Ingeborg. Hair curler. 4,353,380, Cl. 132-40.000.

Koller, Peter; and Mayr, Ulrich, to Siemens Aktiengesellschaft. Device for teletypewriters for the deposit of sheet-type recording media. 4,354,055, Cl. 178-42.000.

Kolling, Heinrich: *See*—
Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,353,913, Cl. 424-263.000.

Komatsu, Akira: *See*—
Yamada, Kyota; and Komatsu, Akira, 4,354,067, Cl. 179-146.00H.

Kominami, Yasuo: *See*—
Sato, Tetsuo; and Kominami, Yasuo, 4,354,209, Cl. 360-61.000.

Komine, Kikuji: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.

Konijnendijk, Willem L.; Peters, Robert C.; and Willemsen, Petrus J. M., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,354,139, Cl. 313-486.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.

Konrath, Karl: *See*—
Straubel, Max; Konrath, Karl; and Brink, Gerhard, 4,353,340, Cl. 123-365.000.

Koppe, Robert G. Pouch forming and filling apparatus. 4,353,198, Cl. 53-570.000.

Kotthaus, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method for fabricating gears with generated tooth flanks. 4,353,671, Cl. 409-26.000.

Koufos, James. Securing and clamping device. 4,353,537, Cl. 269-266.000.

Kovar, Josef; and Suchy, Milos, to Ustav pro vyzkum motorvych vozidel. Suspension of vehicles for rugged terrain. 4,353,428, Cl. 180-7.00R.

Kowa Company, Ltd.: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.

Koyama, Naoki, to Canon Kabushiki Kaisha. Lens control mechanism for television camera. 4,354,203, Cl. 358-227.000.

Kracik, Jiri: *See*—
Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, 4,353,368, Cl. 128-214.00R.

Kraft, Wayne R.: *See*—
Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., 4,354,228, Cl. 364-200.000.

Kragen, Horst; and Brigand, Gerard, to CECA S.A. Enhanced oil recovery. 4,353,805, Cl. 252-8.55D.

Krakow, Heinz: *See*—
Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.

Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., to Xerox Corporation. Dynamic mounting for holographic spinners. 4,353,615, Cl. 350-3.710.

Kramer, Franz: *See*—
Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.

Kramer, Horst-Dieter: *See*—
Potthast, Ruthard; Mentzel, Werner; and Kramer, Horst-Dieter, 4,354,038, Cl. 562-475.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Device for removing the lacquer from waveguides. 4,353,382, Cl. 134-113.000.

Kresak, Fedor P.: *See*—
Beer, Frederick W.; Davis, Robert A.; Kresak, Fedor P.; and Kuev, Conio C., 4,353,196, Cl. 53-451.000.

Kriebich, Willard H.: *See*—
Gilleo, Kenneth B.; and Kriebich, Willard H., 4,353,858, Cl. 264-268.000.

Krocker, Robert E.: *See*—
Saunders, James F.; and Krocker, Robert E., 4,353,409, Cl. 165-2.000.

Krosnick, Andrew. Paddle ball racket with adjustment for flexing. 4,353,550, Cl. 273-67.00R.

Kruger, Hendrik R.: *See*—
Rayment, David J.; and Kruger, Hendrik R., 4,354,099, Cl. 235-449.000.

Krumhansl, Mark U. Heating and cooling system. 4,353,412, Cl. 165-59.000.

Krynski, Edward P., to D. Gottlieb & Co. Drop target assembly for pinball game. 4,353,553, Cl. 273-121.00R.

Kuan, Tiong H., to General Tire & Rubber Company, The. Rubber slab dip. 4,354,001, Cl. 524-501.000.

Kubbota, Massashi: *See*—
Noda, Toru; Ichihashi, Yoshinobu; and Kubbota, Massashi, 4,353,981, Cl. 430-536.000.

Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, to Mitsubishi Mining & Cement Co., Ltd. Apparatus for digging and transporting soil and sand, stones and rocks, minerals and the like. 4,353,796, Cl. 209-240.000.

Kubota, Hitoshi: *See*—
Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.

Kubota, Ltd.: *See*—
Isoyama, Mitsunori; Takeda, Susumu; and Nakai, Masatoshi, 4,353,388, Cl. 137-240.000.

Kuchar, James F.: *See*—
Mehrens, Douglas W.; and Kuchar, James F., 4,353,846, Cl. 261-4.000.

Kuckhermann, Gustav, to Icoma Packtechnik GmbH. Method for welding the inner layers of multi-layer paper sacks. 4,353,770, Cl. 156-308.400.

Kuev, Conio C.: *See*—
Beer, Frederick W.; Davis, Robert A.; Kresak, Fedor P.; and Kuev, Conio C., 4,353,196, Cl. 53-451.000.

Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, to Kienzle Apparate GmbH. Arrangement for obtaining an indication of efficiency of operation of a motor vehicle. 4,354,173, Cl. 340-52.00F.

Kuka, James M. Telephone handset with illuminated magnifier. 4,354,063, Cl. 179-103.000.

Kukulak, Eduard: *See*—
Griesheimer, Willi; and Kukulak, Eduard, 4,353,335, Cl. 123-185.00P.

Kulachek, Mikhail I.: *See*—
Zhukovsky, Alexei A.; Butkin, Vladimir D.; and Kulachek, Mikhail I., 4,354,233, Cl. 364-420.000.

Kulakov, Vladimir I.: *See*—
Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V., 4,354,114, Cl. 250-458.100.

Kulprathipanja, Santi: *See*—
Cleary, Michael T.; and Kulprathipanja, Santi, 4,353,838, Cl. 260-419.000.
Cleary, Michael T.; and Kulprathipanja, Santi, 4,353,839, Cl. 260-419.000.

Kump, Wilhelm: *See*—
Bickel, Hans; and Kump, Wilhelm, 4,353,826, Cl. 260-239.30P.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Endo, Hiroyuki; Ohhira, Hiroshi; and Sasaki, Tohru, 4,353,960, Cl. 428-373.000.

Kurita, Takayuki: *See*—
Marutake, Yozo; Kurita, Takayuki; and Fukutome, Tatsuro, 4,354,061, Cl. 179-82.000.

Kushi, Kenji: *See*—
Nakashima, Atushi; Edamatu, Michisuke; and Kushi, Kenji, 4,353,934, Cl. 427-57.000.

Kusuhara, Akinobu: *See*—
Yamaoka, Sigenori; Kusuhara, Akinobu; and Endo, Toshinaga, 4,353,954, Cl. 428-216.000.

Kutnyak, Thomas A., to Automation Industries, Inc. Electrical current-carrying flexible hose and method of making same. 4,354,051, Cl. 174-47.000.

Kyburz, Emilio: *See*—
Hunkeler, Walter; and Kyburz, Emilio, 4,353,827, Cl. 260-239.30P.

Kyes, Robert W.: *See*—
Junkas, Ronald J.; and Kyes, Robert W., 4,353,182, Cl. 43-54.50R.

Kyminas, Stanley C.; Einhaus, Bernard J.; and Hinds, Stephen G., to Celotex Corporation, The. Embossable coating and method of producing embossed coated substrate. 4,353,949, Cl. 428-195.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Takizawa, Hiroshi; Oiji, Yoshimasa; and Hirayama, Tatsuyuki, 4,353,923, Cl. 424-285.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.

Kyowa Vacuum Engineering, Ltd.: *See*—
Kobayashi, Masakazu, 4,353,222, Cl. 62-268.000.

Kyung, Jai H.; Grimm, Robert A.; and Holehouse, Joseph G., to Ashland Oil, Inc. Aromatic isocyanate preparation. 4,353,841, Cl. 260-453.00P.

L. R. Nelson Corporation: *See*—
Hayes, Jerry R., 4,353,506, Cl. 239-206.000.

La Gard, Inc.: *See*—
Uyeda, Tim M., 4,353,231, Cl. 70-316.000.

La Puntimatic S.n.C. di Musiani Franco & C.: *See*—
Volta, Ideo, 4,354,216, Cl. 361-92.000.

Lada, Henry: *See*—
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., 4,353,780, Cl. 156-664.000.

Ladewig, Glen R.; and Chang, Feng-Chih, to Dow Chemical Company, The. Process for obtaining high purity bisphenol A. 4,354,046, Cl. 568-724.000.

Lafarge: *See*—
Baudouin, Jacques; Caspar, Jean-Pierre; and Gaillard, Jacques, 4,353,751, Cl. 106-306.000.

Lagus, Peter L.; and Peterson, Edward W., to Systems, Science and Software. Method and apparatus for in situ determination of permeability and porosity. 4,353,249, Cl. 73-155.000.

Lahti, Lasse, to G. A. Serlachius Oy. Soil preparing device for preparing forest soil. 4,353,421, Cl. 172-5.000.

Lake Shore, Inc.: *See*—
Mikulich, Henry V.; and Lehmann, Richard P., 4,353,676, Cl. 414-512.000.

Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., to Motorola, Inc. Programmable digital data terminal for mobile radio transceivers. 4,354,252, Cl. 364-900.000.

Lambregts, Antonius A.; and Hansen, Rolf, to Boeing Company, The. Method and apparatus for producing an aircraft flare path control signal. 4,354,237, Cl. 364-428.000.

Lamy, Jean M.; and Egret, Jacques, to Regie Nationale des Usines Renault. Control fork for a gear box sliding block. 4,353,449, Cl. 192-82.00R.

Lang, Gyorgy: *See*—
Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.

Langbein-Pfanhauser Werke AG: *See*—
Koblenzer, Heinz, 4,353,323, Cl. 118-61.000.

Langdon, William K., to BASF Wyandotte Corporation. Carbonate and carboxylic acid ester group-containing non-ionic surface-active agents. 4,353,834, Cl. 260-404.500.

Langford, Frederic E., to Washington Logging Equipment, Inc. System for inhauling and outhauling lines. 4,353,527, Cl. 254-304.000.

Langner, Horst: *See*—
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.

Lanier, Charles S.: *See*—
Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, 4,354,229, Cl. 364-200.000.

Larson, David L.: *See*—
Kaiser, Mark E.; and Larson, David L., 4,354,029, Cl. 548-239.000.

Lasag S.A.: *See*—
Schwob, Hans-Peter; and Soppelsa, Peter, 4,354,272, Cl. 372-36.000.

Laurent, Henry: *See*—
Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,353,985, Cl. 435-59.000.

Layec, Herve: *See*—
Bordry, Herve; Layec, Herve; and L'Hostis, Jean-Claude, 4,354,263, Cl. 370-94.000.

Le Froid Industriel York S.A.: *See*—
Girardin, Pierre; and Duplan, Max, 4,353,504, Cl. 239-14.000.

Lear Siegler, Inc.: *See*—
Saur, Charles W., 4,353,458, Cl. 198-781.000.

Leberzammer, Ernst; and Roos, Leo, to Du Pont de Nemours, E. I., and Company. Polymeric binders for aqueous processable photopolymer compositions. 4,353,978, Cl. 430-302.000.

Leclerc, Pierre; Huignard, Jean-Pierre; and Aubourg, Philippe, to Thomson-CSF. Optical device for printing planar objects. 4,353,616, Cl. 350-3.750.

Lecloux, Andre; Declerck, Claude; and Legrand, Franz, to INTEROX (Societe Anonyme). Process for the preparation of carboxyl compounds. 4,353,832, Cl. 549-272.000.

LeCraw, Roy C.: *See*—
Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., 4,354,254, Cl. 365-33.000.

Lectromelt Corporation: *See*—
Persson, John A., 4,353,738, Cl. 75-10.00R.

LeDieu, Bernard: *See*—
Guezou, Jean; LeDieu, Bernard; and Martin, Jean-Pierre, 4,354,262, Cl. 370-58.000.

Lee, Henry J. Radar transparent rigid polyurethane laminate systems for radomes. 4,353,769, Cl. 156-299.000.

Lee, Man S., to GTE Automatic Electric Laboratories, Inc. Switched-capacitor source resistor simulation circuit. 4,354,250, Cl. 364-802.000.

Lee, Minyoung; and Szala, Lawrence E., to General Electric Company. Polycrystalline silicon-bonded cubic boron nitride body and method. 4,353,714, Cl. 51-295.000.

Lee, Minyoung; and Szala, Lawrence E., to General Electric Company. Process for cementing diamond to silicon-silicon carbide composite and article produced thereby. 4,353,963, Cl. 428-408.000.

Lee, Raymond: *See*—
Gagliani, John; and Lee, Raymond, 4,353,998, Cl. 523-219.000.

Lee, Richard M., to Westinghouse Electric Corp. Apparatus for removing NOx and for providing better plant efficiency in combined cycle plants. 4,353,206, Cl. 60-39.18B.

Lee, Richard M., to Westinghouse Electric Corp. Apparatus for removing NOx and for providing better plant efficiency in simple cycle combustion turbine plants. 4,353,207, Cl. 60-39.18B.

Leeder, Graham M.: *See—*
Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., 4,354,128, Cl. 310-242.000.

Leenders, Leon G., to Centre d'Etude de l'Energie Nucleaire, C.E.N. Method for localizing a leaking rod in a nuclear fuel assembly. 4,353,863, Cl. 376-251.000.

Legrand, Franz: *See—*
Lecloux, Andre; Declerck, Claude; and Legrand, Franz, 4,353,832, Cl. 549-272.000.

Lehmann, Hans D.: *See—*
Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,353,904, Cl. 424-250.000.

Lehmann, Richard P.: *See—*
Mikulich, Henry V.; and Lehmann, Richard P., 4,352,676, Cl. 414-512.000.

Leicht, John R.: *See—*
Sohl, Gordon; Masters, John R.; and Leicht, John R., 4,353,656, Cl. 400-157.300.

Leitner, Gordon F., to Water Services of America, Inc. Heat exchanger tube cleaning. 4,353,414, Cl. 165-95.000.

Lemelson, Jerome H. Switch and lock activating system and method. 4,354,189, Cl. 340-825.310.

Lenke, Dieter: *See—*
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.
Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,353,904, Cl. 424-250.000.

Lentz, Ronald R., to Litton Systems, Inc. Microwave oven leakage detector and method of using same to test door seal leakage. 4,354,153, Cl. 324-95.000.

Leonard, Ronald J., to Baxter Travenol Laboratories, Inc. Hydrophobic diffusion membranes for blood having wettable surfaces. 4,353,799, Cl. 210-321.300.

Leopold Kostal, Firma: *See—*
Speidel, Volker; Bergmann, Eduard; Kassner, Klaus; and Berginski, Werner-Ernst, 4,354,155, Cl. 324-133.000.

Lerco Corporation: *See—*
Haley, Ernest K., 4,353,457, Cl. 198-774.000.

Lersmacher, Bernhard, to U.S. Philips Corporation. Method of solid-state pyrolysis of organic polymeric substances. 4,353,782, Cl. 201-25.000.

Lesher, George Y.; and Dickinson, William B., to Sterling Drug Inc. 3-Chloro-6-(pyridinyl)-pyridazines. 4,354,026, Cl. 544-238.000.

Lesowsky, Joseph. Wall anchor. 4,353,673, Cl. 411-38.000.

Lever Brothers Company: *See—*
McFadyen, Robert C., 4,353,480, Cl. 221-63.000.

Levy, Michael A. Penetrating topical medicament. 4,353,896, Cl. 424-195.000.

Lewison, Lawrence. Manufacture of soft contact lenses having vent passageways. 4,353,849, Cl. 264-2.700.

LFE Corporation: *See—*
Jacob, Adir, 4,353,777, Cl. 156-643.000.

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Bordry, Herve; Layec, Herve; and L'Hostis, Jean-Claude, 4,354,263, Cl. 370-94.000.

Liang, Wang-Tao. Merchandise packaging system. 4,353,461, Cl. 206-45.340.

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Hasch, Gunter; and Minner, Willy, 4,354,161, Cl. 330-254.000.

Liebel, John T., Jr.: *See—*
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.

Lienerth, Aladar: *See—*
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.

Lim, Hui C.: *See—*
Scott-Jackson, Dennis G.; and Lim, Hui C., 4,353,705, Cl. 474-158.000.

Linck, Diethard: *See—*
Hagen, Rolf; Linck, Diethard; and Pappenberger, Joerg, 4,354,261, Cl. 370-42.000.

Lincoln, Frank H., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-6-alkoxy-PGI_1 compounds. 4,354,021, Cl. 542-431.000.

Linde Aktiengesellschaft: *See—*
Rohde, Wilhelm, 4,353,716, Cl. 55-59.000.

Lindvay, Michael W. Flame-retarded high impact polystyrene composition. 4,353,820, Cl. 524-409.000.

Linnert, Peter J.; and Quinn, James R., to Trane Company, The. Reciprocating gas compressor having suction shut-off unloading means. 4,353,682, Cl. 417-295.000.

Linquist, Wayne; and Pearson, Vernon, to Ex-Cell-O Corporation. Draw punch. 4,353,164, Cl. 30-360.000.

Lipahield, Eugene C., to Orschein Co. Brake cable operating apparatus including anchor plate spacer. 4,353,265, Cl. 74-501.00R.

Little, Roger G.: *See—*
Armini, Anthony J.; and Little, Roger G., 4,353,160, Cl. 29-572.000.

Litton Systems, Inc.: *See—*
Lentz, Ronald R., 4,354,153, Cl. 324-95.000.

Liu, Gordon Y. T. Waterbike. 4,353,321, Cl. 114-283.000.

Lizardi, Robert, Jr.: *See—*
Albany, Stanley J.; and Lizardi, Robert, Jr., 4,354,052, Cl. 174-48.000.

Lockformer Company, The: *See—*
Viesturs, Elmars H.; and Bauscher, Billy J., 4,353,232, Cl. 72-50.000.

Loctite Corporation: *See—*
Argazzi, Dennis J., 4,353,325, Cl. 118-683.000.

Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, to USV Pharmaceutical Corporation. Triazoloquinoxalin-4-ones. 4,354,027, Cl. 544-346.000.

Lohmann GmbH & Co. KG: *See—*
Damke, Otto; and Reutter, Hubert F., 4,353,510, Cl. 242-118.320.

Lomas, David A.; and Thomnson, Gregory J., to UOP Inc. Fluid catalyst regeneration process. 4,353,812, Cl. 252-417.000.

Lombardo, Richard S. R. Vehicle throttle control. 4,353,443, Cl. 192-3.00T.

Lomnes, Randy K.: *See—*
Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.

Long-Lok Fasteners Corporation: *See—*
Bowman, James L., 4,353,941, Cl. 427-287.000.

Long, William E.: *See—*
Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., 4,353,974, Cl. 430-218.000.

Lonnemo, Kurt R., to Sperry Corporation. Power transmission. 4,353,289, Cl. 91-420.000.

L'Oreal: *See—*
Bore, Pierre; and De Labbey, Arnaud, 4,353,708, Cl. 23-230.00B.

Lotoski, John G. D., to Sea Trec Enterprises, Ltd. Quick-coupling link. 4,353,203, Cl. 59-85.000.

Loup, Ronald L., to Double A Products Co. Solenoid operated directional valve with detent mechanism. 4,353,394, Cl. 137-625.650.

Lovell, James B., to American Cyanamid Co. Amidino hydrazone . $C_{17}H_{29-35}$ COOH insect and fire ant bait formulations. 4,353,907, Cl. 424-251.000.

Lovercheck, Susan L. Frozen dessert product. 4,353,927, Cl. 426-101.000.

Lovett, Bruce E. Lockable removable decorative and protective panels for vehicles. 4,353,584, Cl. 293-1.000.

Lowe, Frederick G., to UOP Inc. Vehicle seats. 4,353,594, Cl. 297-307.000.

Lowe, George F.; Gutkin, Peter A.; and Wehrenberg, Charles C. Attachable, image-modifying screen for television images. 4,354,205, Cl. 358-250.000.

Lucas, Arthur C.: *See—*
Mitrofanov, Nicholas; and Lucas, Arthur C., 4,354,135, Cl. 313-93.000.

Lucas Industries Limited: *See—*
Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., 4,354,128, Cl. 310-242.000.
Farr, Glyn P. R., 4,353,440, Cl. 188-181.00A.
Mowbray, Dorian F., 4,353,336, Cl. 123-198.00B.

Lukens, Herbert R., Jr.; and Williams, Colin B., to IRT Corporation. Method for detecting organic vapors. 4,353,886, Cl. 424-1.000.

Luker, Charles E., to Sunbeam Plastics Corporation. Load bearing closure. 4,353,474, Cl. 215-220.000.

Lummus Company, The: *See—*
Van Meteren, Johannes, 4,353,162, Cl. 29-727.000.

Luther, Lars C.: *See—*
Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., 4,354,254, Cl. 365-33.000.

Lutzenberger, Kurt, to Switchcraft, Inc. Switch position indicator. 4,354,076, Cl. 200-308.000.

Luzzana, Massimo. Method and apparatus for the determination of substances in biological solutions by differential pH measurement. 4,353,867, Cl. 422-68.000.

Lyakhevich, Genrickh D.; and Sokolovsky, Alexandr E. Method of making a suspension of a filler for rubber mixtures. 4,353,752, Cl. 106-309.000.

Lynch, Henry W.: *See—*
Finney, Roy P.; and Lynch, Henry W., 4,353,360, Cl. 128-79.000.

Lysholm, Donna L.: *See—*
Pellet, Regis J.; Bertolacini, Ralph J.; and Lysholm, Donna L., 4,353,814, Cl. 252-441.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Schuster, Georg, 4,353,300, Cl. 101-365.000.

M.L. Aviation Company Limited: *See—*
Benning, Vernon A., 4,353,528, Cl. 254-360.000.

Macaster Controls, Inc.: *See—*
Boyce, William A., 4,353,568, Cl. 280-94.000.

MacDonald, Gene W., to GMSG, Inc. Method of making a bowling ball. 4,353,850, Cl. 264-25.000.

Machinefabriek G. J. Nijhuis B.V.: *See—*
Nijhuis, Johan W., 4,353,147, Cl. 17-1.00E.

MacLennan, Roderick A.; and Mulvey, William J., to United Technologies Corporation. Automatic lock-positioning of foldable helicopter blades. 4,354,234, Cl. 364-424.000.

MacMillan Bloedel Limited: *See—*
Schilling, Walter W., 4,353,401, Cl. 144-193.00A.

Macnabb, Thomas C. Underwater swimming goggles and masks with gravity-operated wipers. 4,353,134, Cl. 2-428.000.

Macura, Vaclav: *See—*
Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.

Madocsay, Attila: *See—*
Dery, Tibor; and Madocsay, Attila, 4,353,693, Cl. 433-27.000.

Maeda, Nobutaka: *See*—
Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.

Maemori, Takashi, to Fuji Photo Film Co., Ltd. Over-head projector with partial projection device. 4,353,627, Cl. 353-24.000.

Maezawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Calendar display device. 4,353,178, Cl. 40-107.000.

Magic Mold Corporation: *See*—
Glickman, Joel I., 4,353,663, Cl. 403-230.000.

Magnuson, Roland A., to PACCAR Inc. Recoil force correction for elevation in automatic weapons employing soft recoil. 4,353,285, Cl. 89-42.00B.

Magyar Aluminiumipari Troszt: *See*—
Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.

Maholick, Andrew W.: *See*—
Hays, Daniel O., Jr.; Maholick, Andrew W.; and Mize, William N., 4,354,227, Cl. 364-200.000.

Mahon, Michael J., to Burroughs Corporation. Automatic power disconnect system for wafer scale integrated circuits. 4,354,217, Cl. 361-104.000.

Mahoney, Kenneth J. Basketball goal assembly. 4,353,548, Cl. 273-1.50R.

Maida, Osamu, to Nippon Kogaku K.K. Camera with motor drive device. 4,353,633, Cl. 354-173.000.

Maier, Hermann F. L., to U.S. Philips Corporation. Leadthrough for electric conductors. 4,353,623, Cl. 350-391.000.

Maier, William H.: *See*—
Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, 4,353,794, Cl. 208-321.000.

Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, to Robert Bosch GmbH. Diaphragm pressure regulator. 4,353,385, Cl. 137-115.000.

Maldonado, Paul: *See*—
Faure, Alain; Maldonado, Paul; Husson, Jean-Francois; and Coste, Camille, 4,353,729, Cl. 71-11.000.

Malicet, Philippe: *See*—
Breton, Jean-Jacques; and Malicet, Philippe, 4,353,238, Cl. 72-209.000.

Maloblocki, Richard, to Amtec Development Company. Electronic control system for pneumatic-hydraulic pump dredge. 4,353,174, Cl. 37-58.000.

Malosh, James B.: *See*—
Ahner, Walter D.; and Malosh, James B., 4,353,688, Cl. 432-217.000.

Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Electric hair curling iron with rechargeable battery power supply. 4,354,092, Cl. 219-225.000.

Manabe, Toshikatsu: *See*—
Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, 4,353,808, Cl. 252-301.40P.

Manaka, Toshio; Atago, Takeshi; Ishii, Toshio; and Mouri, Yasunori, to Hitachi, Ltd. Method of controlling air-fuel ratio of internal combustion engine so as to effectively maintain the air fuel ratio at a desired air-fuel ratio of $\lambda=1$. 4,354,238, Cl. 364-431.050.

Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, to Rieter Machine Works Ltd. Method of and apparatus for maintaining substantially constant a quantity of opened fibrous material. 4,353,667, Cl. 406-29.000.

Mannesmann Aktiengesellschaft: *See*—
Hiersig, Heinz M., 4,353,269, Cl. 74-682.000.

Mannesmann DeMag A.G.: *See*—
Bitsch, Harald; and Knaack, Karl, 4,353,606, Cl. 308-189.00R.

Mannesmann Tally Corporation: *See*—
Talbot, Kevin J., 4,353,262, Cl. 74-108.000.

Mansfield, Dennis L.: *See*—
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,353,924, Cl. 424-317.000.

Manske, Wendell J.; and Hawkins, Paul M., to Minnesota Mining and Manufacturing Company. Sanitation indicator. 4,353,990, Cl. 435-287.000.

Mantovani, Aldo: *See*—
Giugiaro, Giorgetto; and Mantovani, Aldo, 4,353,588, Cl. 296-37.100.

Manty, Brian A.: *See*—
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., 4,353,780, Cl. 156-664.000.

Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, to Snamprogetti, S.p.A. Bio-compatible porous fibres and materials for occluding biologically interesting substances, and method for their manufacture. 4,353,996, Cl. 523-105.000.

Margison, Elwood R., to United Conveyor Corporation. Drag bucket apparatus for separating pieces of solid material from a liquid in a receiving tank. 4,353,674, Cl. 414-323.000.

Margraf, Adolf. Contact compartment for removing noxious gaseous components from a gas stream. 4,353,720, Cl. 55-262.000.

Marin, Heiner: *See*—
Hess, Ruediger; and Marin, Heiner, 4,354,073, Cl. 200-148.00A.

Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, to Texaco Inc. Start-up method for partial oxidation process. 4,353,712, Cl. 48-197.00R.

Mark, Victor, to General Electric Company. Process for the preparation of substituted amidines. 4,353,830, Cl. 260-326.860.

Marshall, Donald E., Jr.: *See*—
Gelpey, Jeffrey C.; Marshall, Donald E., Jr.; and White, William J., 4,354,109, Cl. 250-349.000.

Martin, Archer J. P., to Quadrex Corporation. Flexible diaphragm controlled valve. 4,353,243, Cl. 73-23.100.

Martin, Brice E.: *See*—
Quatrini, Lucretia R.; Terlizzi, Marie B.; and Martin, Brice E., 4,353,878, Cl. 423-53.000.
Quatrini, Lucretia R.; and Martin, Brice E., 4,353,879, Cl. 423-53.000.
Quatrini, Lucretia R.; Vogt, Martin C.; and Martin, Brice E., 4,353,881, Cl. 423-58.000.

Martin, Bruce S. Apparatus for holding and positioning a measuring tape. 4,353,167, Cl. 33-137.00R.

Martin, Henry, to Ciba-G igy Corporation. Method of selectively controlling weeds and herbicidal diphenyl ether oxime derivatives. 4,353,736, Cl. 71-105.000.

Martin, Henry: *See*—
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,353,735, Cl. 71-105.000.

Martin, Jack; and Pitkjaan, Elam, to Westinghouse Electric Corp. Incandescent lamp having seal-anchored filament mount, and method of making such lamp. 4,354,137, Cl. 313-222.000.

Martin, Jean-Pierre: *See*—
Guezou, Jean; LeDieu, Bernard; and Martin, Jean-Pierre, 4,354,262, Cl. 370-58.000.

Martin, John; Doorakian, George A.; and Duquette, Lawrence G., to Dow Chemical Company, The. Piperazine derivatives. 4,354,028, Cl. 544-374.000.

Martinelli, Lawrence G., to Verbatim Corporation. Self-lubricating liner. 4,354,213, Cl. 360-133.000.

Marutake, Yozo; Kurita, Takayuki; and Fukutome, Tatsuro, to Rion Kabushiki Kaisha. Sensing coil in hearing aid. 4,354,061, Cl. 179-82.000.

Maruyama, Masanori; Mizushima, Masashi; Fukushima, Masakazu; Miyamoto, Satoru; and Sakai, Hideyuki, to Hitachi, Ltd. Television camera tube with electrostatic focusing and magnetic deflection. 4,354,138, Cl. 313-440.000.

Maruyama, Ryuzaburo: *See*—
Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Neitz, Alfred, 4,353,334, Cl. 123-179.00H.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,353,818, Cl. 524-458.000.

Massau, Julien G. System of collectors for conduits in a dwelling. 4,353,608, Cl. 339-2.00R.

Massey, Raymond D.; and Newsam, Leonard, to Zip Heaters (Aust.) Pty. Limited. Thermostatically controlled electric continuous water heating unit. 4,354,094, Cl. 219-306.000.

Masters, John R.: *See*—
Sohl, Gordon; Masters, John R.; and Leicht, John R., 4,353,656, Cl. 400-157.300.

Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, to Hitachi, Ltd. Side stream type condensing system and method of operating the same. 4,353,213, Cl. 60-646.000.

Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.

Masumoto, Tsutomu: *See*—
Fukuda, Yoshio; Enomoto, Kunio; and Masumoto, Tsutomu, 4,353,255, Cl. 73-587.000.

Matsukawa, Hiroharu: *See*—
Hoshi, Yoshiyuki; and Matsukawa, Hiroharu, 4,353,809, Cl. 252-316.000.

Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, to Nissan Motor Co., Ltd.; and Hitachi, Ltd. Ground-speed Doppler radar for vehicles. 4,354,191, Cl. 343-7.500.

Matsunaga, Tsutomu: *See*—
Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.

Matsuoka, Shinji: *See*—
Oomori, Hideyuki; Matsuoka, Shinji; and Nakagaki, Mitsuhiro, 4,354,195, Cl. 346-75.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Chikamura, Takao; Fujiwara, Shinji; and Fukai, Masakazu, 4,354,104, Cl. 250-211.00J.
Hasegawa, Mitsuhiro; Takewa, Hiroyuki; and Yamamoto, Hiroshi, 4,353,432, Cl. 181-166.000.
Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,354,212, Cl. 360-113.000.
Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, 4,354,130, Cl. 310-313.00A.

Matsuura, Katsumi: *See*—
Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.

Matthies, Paul: *See*—
Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, 4,354,020, Cl. 528-323.000.

Maury, M. Christian, to Compagnie International Pour l'Informatique. Magnetic recording medium and digital storage device including same. 4,354,208, Cl. 360-40.000.

Max Planck-Gesellschaft zur Forderung der Wissenschaften E.V.: *See*—
Birr, Christian; and Stollenwerk, Ulrich, 4,353,821, Cl. 260-112.50R.

Mayberry, Sherry A. Utility brush. 4,353,144, Cl. 15-246.000.

Mayer, Udo: *See*—
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, 4,353,833, Cl. 260-386.000.

Mayfield, Charles W.: *See*—
Jenkins, Oliver J., Jr.; and Mayfield, Charles W., 4,353,187, Cl. 49-501.000.

Mayr, Ulrich: *See*—
Koller, Peter; and Mayr, Ulrich, 4,354,055, Cl. 178-42.000.

Mazzotta, Peter. Miter clamp. 4,353,536, Cl. 269-94.000.

McCain, William T., to United States of America, Army. Articulation joint roll stabilizer. 4,353,572, Cl. 280-492.000.

McCarroll, Alan F.: *See*—
Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., 4,353,615, Cl. 350-3.710.

McCarthy, Milton E. H. Transmissionless drive system. 4,354,144, Cl. 318-13.000.

McCrossin, Edward G., to Hercules Incorporated. Foam compositions for surface application to fibrous substrates. 4,353,993, Cl. 521-65.000.

McFadden, Russell T., to Dow Chemical Company, The. Fast curing polyepoxide coating compositions with good pot life. 4,353,819, Cl. 523-454.000.

McFadyen, Robert C., to Lever Brothers Company. Closure for a dispenser container. 4,353,480, Cl. 221-63.000.

McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., to Jay-El Products Incorporated. Push-button panel assembly including an individually lighted push-button switch assembly. 4,354,077, Cl. 200-314.000.

McSpadden, John T., to Inventive Technology International, Inc. Dental tool. 4,353,698, Cl. 433-164.000.

MDS Mannesmann Demag Sack GmbH: *See*—
Wetter, Jacob, 4,353,286, Cl. 91-5.000.

Mechanical Technology Incorporated: *See*—
Curwen, Peter W.; and Dorman, Richard A., 4,353,220, Cl. 62-228.000.

Medical Engineering Corporation: *See*—
Finney, Roy P.; and Lynch, Henry W., 4,353,360, Cl. 128-79.000.

Mehler, Gunter: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.

Mehrens, Douglas W.; and Kuchar, James F. Filter assembly for evaporative cooler pumps. 4,353,846, Cl. 261-4.000.

Meier, David P.: *See*—
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.

Menager, Jean, to Societe Internationale de Mecanique Industrielle S.A. Odometers. 4,354,097, Cl. 235-96.000.

Mendoza, Richard G.: *See*—
McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., 4,354,077, Cl. 200-314.000.

Mennona, Francis A.: *See*—
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,354,039, Cl. 562-582.000.

Mentzel, Werner: *See*—
Potthast, Ruthard; Mentzel, Werner; and Kramer, Horst-Dieter, 4,354,038, Cl. 562-475.000.

Meredith, Thomas D., Jr.: *See*—
Spaller, Albert E., Jr.; Stockbridge, Bruce W.; and Meredith, Thomas D., Jr., 4,353,492, Cl. 226-11.000.

Merger, Franz; and Fouquet, Gerd, to BASF Aktiengesellschaft. Preparation of formaldehyde. 4,354,045, Cl. 568-487.000.

Merkert, Rodney F., to Union Carbide Corporation. Process for producing a vanadium silicon alloy. 4,353,744, Cl. 75-134.00V.

Merkle, Gerd H. Retraction mechanism for dental units and the like. 4,353,695, Cl. 433-78.000.

Merlo, Armando M., to Merlo, Armando M.; and Balsamo, Angelo. Color photography print with exposure data and means for making. 4,353,641, Cl. 355-38.000.

Merrell Toraude et Compagnie: *See*—
Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,353,828, Cl. 260-326.0NS.

Mertzweiller, Guy: *See*—
Pierrel, Michel; and Mertzweiller, Guy, 4,353,531, Cl. 266-120.000.

Messerschmitt-Bolkow-Blohm G.m.b.H.: *See*—
Engl, Ernst, 4,353,389, Cl. 137-375.000.
Grimm, Wilhelm G.; and Schindler, Rudolf, 4,353,964, Cl. 428-408.000.
Groeber, Josef, 4,353,772, Cl. 156-433.000.
Mohrenstein-Ertel, Michael; and Albrecht, Helmut, 4,353,433, Cl. 181-207.000.

Metatech Corporation: *See*—
Perlin, Alfred R., 4,353,250, Cl. 73-161.000.

Meyers, Richard G., to National Telephone Supply Company, The. Shield connector. 4,353,612, Cl. 339-95.00R.

Michel, Thomas J.; and Finger, Richard H., to Santek, Inc. Intelligent test head for automatic test system. 4,354,268, Cl. 371-20.000.

Micheron, Francois, to Thomson-CSF. Piezoelectric acceleration pickup with a polymer transducer member. 4,354,134, Cl. 310-800.000.

Michigan Molecular Institute: *See*—
Elias, Hans-G.; and Warner, Robert J., 4,354,018, Cl. 528-206.000.

Microcomputer Systems Corporation: *See*—
Gilovich, Paul A.; and Toreson, James S., 4,354,211, Cl. 360-84.000.

Midorikawa, Minoru, to Nissan Motor Co., Ltd. Catalytic converter. 4,353,872, Cl. 422-179.000.

Mihashi, Yutaka: *See*—
Yamanaka, Kenichi; Mihashi, Yutaka; and Sogo, Toshio, 4,353,754, Cl. 148-1.500.

Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, to Aisin-Warner Kabushiki Kaisha. System for controlling the hydraulic pressure during a shift operation of an automatic, variable speed transmission. 4,354,236, Cl. 364-424.100.

Mikulich, Henry V.; and Lehmann, Richard P., to Lake Shore, Inc. Bunker for tunnel boring. 4,353,676, Cl. 414-512.000.

Milbauer, Nathaniel A. Portable jacket for treatment and protection of injured body members. 4,353,359, Cl. 128-66.000.

Milleker, William: *See*—
Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.

Miller, Christopher S.; Pope, Daniel F.; and Hokanson, Jon V., to Eur-Control M&D, U.S.A., Inc. Method and apparatus for determining the moisture content of particulate material that may contain an unknown amount of moisture in a frozen state. 4,354,244, Cl. 364-556.000.

Miller, Henry W., to Cameron Iron Works, Inc. Wellhead apparatus and method of running same. 4,353,420, Cl. 166-382.000.

Miller, Roy W.; and Mutyala, Bhaskara R., to Pullman Incorporated. Box car corner post arrangement. 4,353,314, Cl. 105-410.000.

Milliken Research Corporation: *See*—
Burns, Alonzo M., Jr.; and Gilbert, Woodrow P., 4,353,706, Cl. 8-114.600.

Millner, Rudolf: *See*—
Seliger, Ewald; Dudar, Klaus; Stohr, Gunter; Millner, Rudolf; and Banse, Wilhelm, 4,353,928, Cl. 426-238.000.

Minematsu, Hiroyoshi: *See*—
Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.

Mineura, Kazuyuki: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.

Minner, Willy: *See*—
Hasch, Gunter; and Minner, Willy, 4,354,161, Cl. 330-254.000.

Minnesota Mining and Manufacturing Company: *See*—
Forte, Mark R.; and Sonstegard, David A., 4,353,135, Cl. 3-1.911.
Manske, Wendell J.; and Hawkins, Paul M., 4,353,990, Cl. 435-287.000.
Seemann, Ronald W., 4,353,463, Cl. 206-220.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kojima, Hiroaki, 4,353,636, Cl. 355-1.000.
Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, 4,353,648, Cl. 355-133.000.
Yuasa, Yoshio, 4,353,629, Cl. 354-23.00D.

Minoura, Kazuo: *See*—
Tokumitsu, Jun; and Minoura, Kazuo, 4,353,617, Cl. 350-6.800.

Mir, Leon; and Zahka, Joseph, to Abcor, Inc. Apparatus for and process of removal of solvent vapors. 4,353,715, Cl. 55-22.000.

Mitchell, Ernest M., to Mitchell, Rodney M. Multiple hole gauging tool. 4,353,169, Cl. 33-173.000.

Mitchell, Rodney M.: *See*—
Mitchell, Ernest M., 4,353,169, Cl. 33-173.000.

Mitrofanov, Nicholas; and Lucas, Arthur C., to Harshaw Chemical Company, The. Geiger-Mueller tube with nickel copper alloy cathode. 4,354,135, Cl. 313-93.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.
Yamanaka, Kenichi; Mihashi, Yutaka; and Sogo, Toshio, 4,353,754, Cl. 148-1.500.
Yoshida, Masayuki, 4,354,171, Cl. 340-21.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.

Mitsubishi Mining & Cement Co., Ltd.: *See*—
Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, 4,353,796, Cl. 209-240.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Noda, Toru; Ichihashi, Yoshinobu; and Kubbota, Massashi, 4,353,981, Cl. 430-536.000.

Mitsubishi Rayon Company, Ltd.: *See*—
Nakashima, Atushi; Edamatu, Michisuke; and Kushi, Kenji, 4,353,934, Cl. 427-57.000.

Mitsui, Ryoichi: *See*—
Aoshima, Atsushi; Mitsui, Ryoichi; and Nihei, Hitoshi, 4,354,044, Cl. 568-479.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Inoue, Shigeru; Ono, Hiroshi; and Fujii, Hidetsugu, 4,354,040, Cl. 564-67.000.
Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, 4,353,730, Cl. 71-29.000.

Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.

Mitsuyu, Tsuneo: *See*—
Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, 4,354,130, Cl. 310-313.00A.

Miyaji, Naotaka: *See*—
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.

Miyamoto, Satoru: *See*—
Maruyama, Masanori; Mizushima, Masashi; Fukushima, Masakazu; Miyamoto, Satoru; and Sakai, Hideyuki, 4,354,138, Cl. 313-440.000.

Miyasaka, Kiyoshi, to Fujitsu Limited. Semiconductor memory device. 4,354,256, Cl. 365-189.000.

Miyashita, Shin: *See*—
Nameki, Yoshinobu; and Miyashita, Shin, 4,354,206, Cl. 358-254.000.

Miyashita, Takao: *See*—
Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.

Miyata, Kenji: *See*—
Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.

Mize, William N.: *See*—
Hays, Daniel O., Jr.; Maholick, Andrew W.; and Mize, William N., 4,354,227, Cl. 364-200.000.

Mizuno, Hiroshi: *See*—
Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, 4,353,648, Cl. 355-133.000.

Mizuno, Kenji: *See*—
Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.

Mizushima, Masashi: *See*—
Maruyama, Masanori; Mizushima, Masashi; Fukushima, Masakazu; Miyamoto, Satoru; and Sakai, Hideyuki, 4,354,138, Cl. 313-440.000.

Mobay Chemical Corporation: *See*—
Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., 4,353,995, Cl. 521-125.000.

Moberg, Sigurd M., to E. J. Brooks Company. Seal of the padlock type. 4,353,583, Cl. 292-320.000.

Mobil Oil Corporation: *See*—
Braid, Milton, 4,353,807, Cl. 252-49.600.
Bustin, Franz, 4,353,497, Cl. 229-55.000.
Caldwell, Richard L., 4,353,248, Cl. 73-152.000.
Hungerford, Gordon P., 4,353,967, Cl. 428-520.000.

Mobil Tyco Solar Energy Corporation: *See*—
Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,353,757, Cl. 148-172.000.

Moertel, George B., to American Thread. Forming articles with slide fasteners and attached sewing guides. 4,353,760, Cl. 156-66.000.

Mohlenbrock, William. Roller ski training device. 4,353,566, Cl. 280-87.04A.

Mohrenstein-Ertel, Michael; and Albrecht, Helmut, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Damping covering. 4,353,433, Cl. 181-207.000.

Molina, Antonio F. Freewheel flywheel transmission system. 4,353,569, Cl. 280-217.000.

Mollstatter, Walter, to Zinser Textilmaschinen GmbH. Exhaust system for removing airborne particles from the vicinity of textile machinery. 4,353,721, Cl. 55-283.000.

Monsanto Company: *See*—
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,353,924, Cl. 424-317.000.
Franz, John E.; and Kaufman, Robert J., 4,353,731, Cl. 71-88.000.

Moore, James M.: *See*—
Arnold, Everett L.; and Moore, James M., 4,353,489, Cl. 222-570.000.

Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., to International Business Machines Corporation. Flexible processor on a single semiconductor substrate using a plurality of arrays. 4,354,228, Cl. 364-200.000.

Moore, William H.; and Jorgensen, Donald R. Method of mixing chemically bonded foundry sand by vibratory action. 4,353,651, Cl. 366-2.000.

Moorey, Ernest J., to Electricity Council, The. Non-contact measurement of physical properties of continuously moving metal strip. 4,353,256, Cl. 73-597.000.

Moraw, Roland; and Schadlich, Gunther, to Hoechst Aktiengesellschaft. Device for removing developer liquid from a recording material. 4,353,639, Cl. 355-10.000.

Moraw, Roland: *See*—
Dryczynski, Kurt; Schadlich, Gunther; and Moraw, Roland, 4,353,970, Cl. 430-31.000.

Morcov, Paul. Pressure regenerator. 4,353,864, Cl. 376-402.000.

Moreau, Pierre A.; and Sauvestre, Jean C., to Etat Francais represente par le Delegue General pour l'Armement. Kinetic-energy projectile. 4,353,305, Cl. 102-519.000.

Morelock, Charles R., to General Electric Company. Integral composite of polycrystalline diamond and/or cubic boron nitride body phase and substrate phase. 4,353,953, Cl. 428-213.000.

Morgan, Donald F. Knee engaging ski. 4,353,573, Cl. 280-606.000.

Morgan, Thomas K., Jr.: *See*—
Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,353,921, Cl. 424-273.00R.

Mori, Kinji; Ihara, Hirokazu; and Nohmi, Makoto, to Hitachi, Ltd. Data transmission system utilizing loop transmission lines between terminal units. 4,354,267, Cl. 371-11.000.

Mori, Toshihito: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.

Moringiello, Donald C.: *See*—
Dulberger, Michael D.; Hibner, David H.; and Moringiello, Donald C., 4,353,604, Cl. 308-184.00A.

Morisi, Franco: *See*—
Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, 4,353,996, Cl. 523-105.000.

Morita, Katuhiro: *See*—
Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.

Moriya, Muneo: *See*—
Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.

Morris, Glenn H. Push button safety cap for containers. 4,353,473, Cl. 215-220.000.

Morrissy, Joseph H.: *See*—
Crosaland, William A.; and Morrissy, Joseph H., 4,353,943, Cl. 428-1.000.

Moser, Robert: *See*—
Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, 4,353,667, Cl. 406-29.000.

Moss, Robert J. Toothed belt drive transmission for pumping units. 4,353,445, Cl. 192-4.00R.

Mostek Corporation: *See*—
Eaton, Sargent S., Jr., 4,354,123, Cl. 307-475.000.
Goldstein, Ira L., 4,354,175, Cl. 340-347.0AD.

Motorola, Inc.: *See*—
Conger, David R. L.; Gerson, Ira A.; and White, Richard E., 4,354,248, Cl. 364-724.000.
King, Thomas M.; and Daniel, Sam M., 4,354,249, Cl. 364-754.000.
Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.

Mouri, Yasunori: *See*—
Manaka, Toshio; Atago, Takeshi; Ishii, Toshio; and Mouri, Yasunori, 4,354,238, Cl. 364-431.050.

Mowbray, Dorian F., to Lucas Industries Limited. Fuel pumping apparatus. 4,353,336, Cl. 123-198.00B.

MSI Data Corporation: *See*—
Hester, Gerald P.; and Sherer, Paul, 4,354,101, Cl. 235-463.000.

Muck, Karl-Friedrich; Post, Lothar; and Westen, Hannes, to Hoechst Aktiengesellschaft. Process and embedding system for embedding tissue samples. 4,353,856, Cl. 264-240.000.

Muetterties, Andrew J.; Genese, Joseph N.; and Seberg, Charles H., to Abbott Laboratories. Venipuncture device. 4,353,369, Cl. 128-214.400.

Muhlemann, Hans-Rudolf: *See*—
Guggenheim, Bernhard; and Muhlemann, Hans-Rudolf, 4,353,891, Cl. 424-50.000.

Mukoyama, Yoshiyuki; Chikazumi, Nobutoshi; and Sugitani, Hatuo, to Hitachi Chemical Company, Ltd. Special solvent column for GPC and GPC method using the same. 4,353,801, Cl. 210-635.000.

Mulvey, William J.: *See*—
MacLennan, Roderick A.; and Mulvey, William J., 4,354,234, Cl. 364-424.000.

Mumma, Harold J.; and Reed, Michael E., to FMC Corporation. Article handling apparatus. 4,353,455, Cl. 198-384.000.

Munnichs, Cornelis M.; and Bookelmann, Theodorus F. L., to Stamicarbon, B.V. Installation for protecting of reactors. 4,353,870, Cl. 422-129.000.

Munson, Bruce H. Towing device for use in the surf. 4,353,307, Cl. 104-183.000.

Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, to Ricoh Co., Ltd. Automatic control system for offset printing machine. 4,353,299, Cl. 101-144.000.

Murakami, Susumu: *See*—
Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.

Murata Manufacturing Co., Ltd.: *See*—
Ieki, Hideharu, 4,354,129, Cl. 310-313.00C.

Murmann, Guenter, to Cherry Electrical Products Corporation. Lighted coding switch. 4,354,080, Cl. 200-316.000.

Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Synchronized, fail-operational, fail-safe multi-computer control system. 4,354,230, Cl. 364-200.000.

Muschelknautz, Edgar; and Juse, Rudolf, to Bayer Aktiengesellschaft; and Erdolchemie Gesellschaft. Device and process for cooling liquids containing solids. 4,353,781, Cl. 159-2.00R.

Mussman, Harry E., to Bell Telephone Laboratories, Incorporated. Communication system signaling circuit. 4,354,062, Cl. 179-84.00A.

Mutyala, Bhaskara R.: *See*—
Miller, Roy W.; and Mutyala, Bhaskara R., 4,353,314, Cl. 105-410.000.

Myers, Garrett R., to Myers, Marian B. Remote controlling. 4,353,502, Cl. 236-47.000.

Myers, Marian B.: *See*—
Myers, Garrett R., 4,353,502, Cl. 236-47.000.

Naden, Rex A., to Texas Instruments Incorporated. Bubble redundancy map storage using non-volatile semiconductor memory. 4,354,253, Cl. 365-15.000.

Nagae, Hiromitsu: *See*—
Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.

Nagahama, Takashi: *See*—
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.

Nagai, Yoji: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.

Nagakoshi, Toshiaki: *See*—
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Nagamachi, Koichi: *See*—
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Nagaoka, Shinji: *See*—
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Nagel, Erich: *See*—
Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.

Nagy, Laszlo, to F M Machine Company. Sailing craft mainsail and auxiliary propulsion means therefor. 4,353,702, Cl. 440-8.000.

Naito, Tsutomu: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.

Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, to Furukawa Electric Co., Ltd., The. Polyethylene base resin composition having highly filled with an inorganic material. 4,353,817, Cl. 524-232.000.

Nakagaki, Mitsuhiro: *See*—
Oomori, Hideyuki; Matsuoka, Shinji; and Nakagaki, Mitsuhiro, 4,354,195, Cl. 346-75.000.

Nakagawa, Mitsuru: *See*—
Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobù; and Nakagawa, Mitsuru, 4,353,727, Cl. 65-36.000.

Nakagawa, Shigeyoshi: *See*—
Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.

Nakagawa, Yasuhiko: *See*—
Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.

Nakai, Masatoshi: *See*—
Isoyama, Mitsunori; Takeda, Susumu; and Nakai, Masatoshi, 4,353,388, Cl. 137-240.000.

Nakai, Meroji: *See*—
Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.

Nakamoto, Soichi: *See*—
Ito, Fumio; Ito, Tadashi; Nakamoto, Soichi; and Isobe, Yasuo, 4,353,630, Cl. 354-29.000.

Nakamura, Kaoru; and Funabashi, Akira, to Aisin Seiki Kabushiki Kaisha. Master cylinder reservoir and cover fastening means. 4,353,479, Cl. 220-301.000.

Nakamura, Minoru, to Glory Kogyo Kabushiki Kaisha. Coin packaging apparatus capable of separately discharging proper coin packages and stray coins. 4,353,195, Cl. 53-54.000.

Nakamura, Shozo: *See*—
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.

Nakanishi Dental Manufacturing Co.: *See*—
Nakanishi, Takasuke, 4,353,697, Cl. 433-126.000.

Nakanishi, Kyoji: *See*—
Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.

Nakanishi, Takasuke, to Nakanishi Dental Manufacturing Co. Dental handpiece and a connecting means thereof. 4,353,697, Cl. 433-126.000.

Nakano, Masaki: *See*—
Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, 4,353,808, Cl. 252-301.40P.

Nakano, Seizo: *See*—
Oishi, Kazuaki; and Nakano, Seizo, 4,354,220, Cl. 361-341.000.

Nakashima, Atushi; Edamatu, Michisuke; and Kushi, Kenji, to Mitsubishi Rayon Company, Ltd. Dip-coating method. 4,353,934, Cl. 427-57.000.

Nalle, George S., Jr. Helical net. 4,353,956, Cl. 428-255.000.

Nameki, Yoshinobu; and Miyashita, Shin, to Sony Corporation. Television receiver. 4,354,206, Cl. 358-254.000.

Nanodata Computer Corporation: *See*—
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.

Narumi China Corporation: *See*—
Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.

Naruo, Masaki: *See*—
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.

Nassau Recycle Corporation: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,353,559, Cl. 277-53.000.

National Semiconductor Corporation: *See*—
Wright, John W., 4,354,162, Cl. 330-260.000.

National Starch and Chemical Corporation: *See*—
Skoultchi, Martin M., 4,354,008, Cl. 525-370.000.

National Telephone Supply Company, The: *See*—
Meyers, Richard G., 4,353,612, Cl. 339-95.00R.

NCR Corporation: *See*—
Reitberger, Peter H., 4,354,197, Cl. 346-140.00R.

Necoechea, Robert W. Rigid-diaphragm transducer with plural coils. 4,354,066, Cl. 179-115.5DV.

Neitz, Alfred, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of and apparatus for starting an air-compressing four-stroke cycle internal combustion engine. 4,353,334, Cl. 123-179.00H.

Nelson, Bennie C., Jr.; and Gardner, Jeffrey M., to Container Corporation of America. Stackable tray. 4,353,496, Cl. 229-34.00R.

Nelson, Craig E.; and Kawamoto, Frank T., to Tescom Corporation. Cutting and welding torch valve apparatus. 4,353,395, Cl. 137-861.000.

Nelson, Gerald V.: *See*—
Ganster, Charles A.; and Nelson, Gerald V., 4,354,242, Cl. 364-501.000.

Nelson, H. Lee. Solar collector. 4,353,357, Cl. 126-450.000.

Nelson and Johnson: *See*—
Ciciora, John A., 4,353,263, Cl. 74-337.000.

Neu, Hermann: *See*—
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.

Neufeld, Henry L., to Brunswick Corporation. Back support housing and reel body assembly. 4,353,514, Cl. 242-84.20A.

Neulinger, Franz: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.

Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., to Eocom Corporation. Laser engraving system with massive base table and synchronization controls. 4,354,196, Cl. 346-108.000.

Neumeyer, John L., to Northeastern University. N-Haloalkyl nor apomorphines and method of inactivating dopamine receptor sites and enhancing dopaminergic activity therewith. 4,353,912, Cl. 424-258.000.

Newsam, Leonard: *See*—
Massey, Raymond D.; and Newsam, Leonard, 4,354,094, Cl. 219-306.000.

Newton, Alan B., to Imperial Chemical Industries Limited. Transition metal compound. 4,354,010, Cl. 526-140.000.

Newton, Barrie H.: *See*—
Davies, Robert; Newton, Barrie H.; and Booth, Peter L., 4,354,165, Cl. 331-96.000.

Nicolai, Walter. Method and apparatus for indicating losses of stored materials. 4,353,245, Cl. 73-49.200.

Nielsen, Poul W., to F. L. Smidth & Co. Rotary kiln. 4,353,687, Cl. 432-80.000.

Niertit, Frank; and Conner, Alvin R., to Stromberg-Carlson Corporation. Electronic telephone. 4,354,060, Cl. 179-81.00R.

Nihei, Hitoshi: *See*—
Aoshima, Atsushi; Mitsui, Ryoichi; and Nihei, Hitoshi, 4,354,044, Cl. 568-479.000.

Nihon Nejimawashi Co., Ltd.: *See*—
Fujimoto, Kaoru, 4,353,239, Cl. 72-391.000.

Nijhuis, Johan W., to Machinefabriek G. J. Nijhuis B.V. Apparatus for stunning animals to be slaughtered, such as pigs. 4,353,147, Cl. 17-1.00E.

Nilsen, Carl J., to SWS Incorporated. Z-bar guide apparatus and method of butt welding. 4,354,090, Cl. 219-121.0LC.

Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, to Mitsui Toatsu Chemicals, Incorporated; and Toyo Engineering Corporation. Granulation process. 4,353,709, Cl. 23-313.0FB.

Nippon Elanco Kabushiki Kaisha: *See*—
Yamamoto, Taizo, 4,353,456, Cl. 198-397.000.

Nippon Electric Company, Ltd.: *See*—
Araseki, Takashi; and Ozawa, Kazunori, 4,354,273, Cl. 375-27.000.
Ishimoto, Shoji, 4,354,259, Cl. 365-230.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Adachi, Takeshi; Suzuki, Hideo; and Kaneko, Makoto, 4,353,278, Cl. 84-1.010.

Nippon Kogaku K.K.: *See*—
Maida, Osamu, 4,353,633, Cl. 354-173.000.
Nohda, Masao; and Umemura, Izumi, 4,353,625, Cl. 351-13.000.

Nippon Mining Company Limited: *See*—
Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, 4,353,530, Cl. 266-45.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Chiba, Moichi; and Suzuki, Toshio, 4,353,605, Cl. 308-187.200.

Nippon Soken, Inc.: *See*—
Akita, Sigeyuki, 4,354,219, Cl. 361-284.000.

Nippon Steel Corporation: *See*—
Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.

Nippondenso Co., Ltd.: *See*—
Nonogaki, Masayuki; Ishii, Katsuya; and Hirasawa, Nobumasa, 4,353,224, Cl. 62-515.000.

Nishida, Takeo: *See*—
Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.
Nishikawa, Seiji: *See*—
Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
Nishio, Kosaku, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray cine radiography apparatus. 4,354,112, Cl. 378-99.000.
Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, to Fuji Electric Co., Ltd. Direct contact type multi-stage steam condenser system. 4,353,217, Cl. 60-693.000.
Nishiyama, Masanobu; and Kiuchi, Yasuhiro, to Duskin Franchise Kabushiki Kaisha. Mop carrier and a rotary suppressor therein. 4,353,142, Cl. 15-144.00R.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Light-emitting semiconductor. 4,354,140, Cl. 313-499.000.
Nissan Motor Company: *See*—
Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.
Nissan Motor Company, Ltd.: *See*—
Ebihara, Sakae, 4,353,345, Cl. 123-575.000.
Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.
Kanegae, Hidetoshi, 4,354,239, Cl. 364-431.050.
Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, 4,354,191, Cl. 343-7.500.
Midorikawa, Minoru, 4,353,872, Cl. 422-179.000.
Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,353,342, Cl. 123-493.000.
Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.
Nissen, Axel: *See*—
Horner, Michael; and Nissen, Axel, 4,353,836, Cl. 260-410.500.
Nitto Electric Industrial Co., Ltd.: *See*—
Abe, Masao; Ichinose, Hisashi; and Noda, Yuzuru, 4,354,017, Cl. 528-172.000.
Niwa, Makoto: *See*—
Hiraoka, Shunji; Niwa, Makoto; and Ishii, Satoru, 4,353,680, Cl. 415-219.00R.
Nix, Norbert: *See*—
Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.
Noda, Toru; Ichihashi, Yoshinobu; and Kubbota, Massashi, to Mitsubishi Paper Mills, Ltd. Silver halide photographic material. 4,353,981, Cl. 430-536.000.
Noda, Yuzuru: *See*—
Abe, Masao; Ichinose, Hisashi; and Noda, Yuzuru, 4,354,017, Cl. 528-172.000.
Noeske, Heinz O., to General Electric Company. Pyrolytic cartridge interruption assistance actuator for puffer breaker. 4,354,072, Cl. 200-148.00A.
Noguchi, Isamu: *See*—
Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, 4,353,817, Cl. 524-232.000.
Nohda, Masao; and Umemura, Izumi, to Nippon Kogaku K.K. Eye-refractometer device. 4,353,625, Cl. 351-13.000.
Nohmi, Makoto: *See*—
Mori, Kinji; Ihara, Hirokazu; and Nohmi, Makoto, 4,354,267, Cl. 371-11.000.
Nomura, Noboru: *See*—
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,354,212, Cl. 360-113.000.
Nonogaki, Masayuki; Ishii, Katsuya; and Hirasawa, Nobumasa, to Nippondenso Co., Ltd. Evaporator. 4,353,224, Cl. 62-515.000.
Nordson Corporation: *See*—
Kolibas, James A., 4,353,326, Cl. 118-696.000.
Noritake, Yutaka; Kajitani, Ikuo; and Hirayama, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Support apparatus for catalyst block. 4,353,873, Cl. 422-179.000.
Norris, Thomas R. Fluid blow-off muffler. 4,353,434, Cl. 181-258.000.
North American Car Corporation: *See*—
Anderson, Arthur I., 4,353,668, Cl. 406-90.000.
Northcutt, Charles D., to International Harvester Co. Laminated composite structure and method of manufacture. 4,353,947, Cl. 428-116.000.
Northeastern University: *See*—
Neumeyer, John L., 4,353,912, Cl. 424-258.000.
Northern Engraving Corporation: *See*—
Gilleo, Kenneth B.; and Kriebich, Willard H., 4,353,858, Cl. 264-268.000.
Northrop Corporation: *See*—
Clark, Lee K.; and Peron, Michael C., 4,354,278, Cl. 455-617.000.
Northwestern University: *See*—
Goldberg, Erwin, 4,353,822, Cl. 260-112.50R.
Norton, Lyle K.: *See*—
Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., 4,354,196, Cl. 346-108.000.
Norton, Willard S. Method of straightening and reinforcing structural members. 4,353,194, Cl. 52-742.000.
Nossek, Josef, to Siemens Aktiengesellschaft. Switched-capacitor filter circuit having at least one simulated inductance having controlled switches, capacitors, and an amplifier. 4,354,169, Cl. 333-173.000.
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Magnetic head and method of production thereof. 4,354,212, Cl. 360-113.000.
Novak, Peter; and Gasser, Hermann, to Rieter Machine Works Ltd. Manual apparatus for threading-in textile apparatus. 4,353,202, Cl. 57-279.000.
Novatec, Inc.: *See*—
O'Connor, Arthur H.; and Rossman, Robert A., 4,353,152, Cl. 128-689.000.
Nozaki, Takao; and Ito, Takashi, to Fujitsu Limited. Method of manufacturing semiconductor device. 4,353,936, Cl. 427-94.000.
NRM Corporation: *See*—
Yuhas, Gerald J., 4,353,771, Cl. 156-403.000.
Nuding, Alfred, to Herion-Werke KG. Self-monitoring system for supervising congruence between control signals. 4,354,270, Cl. 371-68.000.
Nyberg, Karl F. L.; and Josefsson, Kjell S., to Telefonaktiebolaget L M Ericsson. Method and an apparatus for transferring digital information in a telephone system. 4,354,265, Cl. 370-111.000.
Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,353,598, Cl. 299-2.000.
O'Connor, Arthur H.; and Rossman, Robert A., to Novatec, Inc. Pulse rate monitor. 4,353,152, Cl. 128-689.000.
Odor, Gyula: *See*—
Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.
Oesterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg: *See*—
Anger, Anton, 4,353,522, Cl. 249-144.000.
Offterdinger, Hermoff F. Runner wheel assembly. 4,353,186, Cl. 49-420.000.
Ogawa, Takuzo: *See*—
Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Ohashi, Fumis: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.
Ohhira, Hiroshi: *See*—
Endo, Hiroyuki; Ohhira, Hiroshi; and Sasaki, Tohru, 4,353,960, Cl. 428-373.000.
Ohmura, Hidemasa: *See*—
Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.
Ohtake, Masayuki: *See*—
Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.
Ohya, Yoshinobu: *See*—
Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, 4,353,951, Cl. 428-198.000.
Oiji, Yoshimasa: *See*—
Takizawa, Hiroshi; Oiji, Yoshimasa; and Hirayama, Tatsuyuki, 4,353,923, Cl. 424-285.000.
Oikawa, Saburo: *See*—
Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Oishi, Kazuaki; and Nakano, Seizo, to Hatachi, Ltd. Gas insulated power switch-gear apparatus. 4,354,220, Cl. 361-341.000.
Oka, Tateki: *See*—
Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, 4,353,648, Cl. 355-133.000.
Okamura, Masahiro: *See*—
Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Okitsu, Hiroyuki: *See*—
Hirose, Isao; Yamamoto, Kiyoshi; and Okitsu, Hiroyuki, 4,354,037, Cl. 562-416.000.
Okoshi, Nobuhiko: *See*—
Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.
Okuzawa, Tugio: *See*—
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.
Olin Corporation: *See*—
Capuano, Italo A.; Carr, Lawrence P.; and Turley, Patricia A., 4,353,741, Cl. 75-109.000.
Gay, Walter A.; and Twohig, Elizabeth A., 4,353,920, Cl. 424-270.000.
Katz, Lawrence E.; and Gay, Walter A., 4,353,908, Cl. 424-251.000.
Pryor, Michael J., 4,353,408, Cl. 164-503.000.
Olive, Edmond E., to Sperry Corporation. Flight path transition control apparatus with predictive roll command. 4,354,240, Cl. 364-434.000.
Olson, Daniel R.; and Goossens, John C., to General Electric Company. Abrasion resistant silicone coated polycarbonate article having an acrylic primer layer containing a U.V. absorbing compound. 4,353,959, Cl. 428-331.000.
Olson, Daniel R.; and Goossens, John C., to General Electric Company. Abrasion resistant silicone coated polycarbonate article having an acrylic primer layer containing a U.V. absorbing compound. 4,353,965, Cl. 428-412.000.

Olson, Eric V.: *See*—
Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., 4,354,196, Cl. 346-108.000.
Olsson, Erik A. Process and apparatus for the manufacture of annular work pieces for subsequent conversion into finished products. 4,353,494, Cl. 228-143.000.
Olympus Optical Co., Ltd.: *See*—
Yonekubo, Ken, 4,353,624, Cl. 350-453.000.
Omark Industries, Inc.: *See*—
Silvon, Kay, 4,353,277, Cl. 83-833.000.
Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of rolling strip. 4,353,237, Cl. 72-205.000.
Omote, Hidetaro: *See*—
Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, 4,353,397, Cl. 139-435.000.
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, to Kyowa Hakko Kogyo Kabushiki Kaisha; and Kitasato Kenkyusho. Process for producing antibiotic nanaomycin E. 4,353,986, Cl. 435-119.000.
Ono, Hiroshi: *See*—
Inoue, Shigeru; Ono, Hiroshi; and Fujii, Hidetsugu, 4,354,040, Cl. 564-67.000.
Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave device using a multi-layer substrate including αAl_2O_3, SiO and ZnO. 4,354,130, Cl. 310-313.00A.
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, to Toa Nenryo Kogyo Kabushiki Kaisha. Solvent dewaxing waxy hydrocarbons using an α-olefin polymer-olefin vinyl acetate copolymer composite dewaxing aid. 4,354,003, Cl. 525-222.000.
Onodera, Yasutaka: *See*—
Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, 4,353,796, Cl. 209-240.000.
Oomori, Hideyuki; Matsuoka, Shinji; and Nakagaki, Mitsuhiro, to Hitachi, Ltd. Ink jet recording apparatus. 4,354,195, Cl. 346-75.000.
Opelika Manufacturing Corporation: *See*—
Brocklehurst, Charles E., 4,353,316, Cl. 112-262.300.
Opex Corporation: *See*—
Stevens, Albert F.; and Haley, Paul E., 4,353,197, Cl. 53-492.000.
Opprecht, Paul. Automated can resistance welder. 4,354,086, Cl. 219-64.000.
Orion-yhtyma Oy: *See*—
Kaila, Juhani O. W.; Honkanen, Erkki J.; Alberty, Joachim E.; and Hukki, Jaakko J., 4,353,914, Cl. 424-267.000.
Orscheln Co.: *See*—
Lipshield, Eugene C., 4,353,265, Cl. 74-501.00R.
Osborn, Norbert L.; and Rae, John R., to WRR Industries, Inc. Turbocharger compressor rotor retainer. 4,353,685, Cl. 417-406.000.
Osborne Industries, Inc.: *See*—
Thibault, Ronald M., 4,353,329, Cl. 119-52.00A.
Oser, Polat: *See*—
Volker, Herbert; and Oser, Polat, 4,353,208, Cl. 60-299.000.
Osterlitz, Hermann, to Salzgitter AG. Welding powder feed device. 4,354,087, Cl. 219-73.200.
Ostlie, Arne M.: *See*—
Strandli, Kaare R.; and Ostlie, Arne M., 4,353,302, Cl. 102-364.000.
Ostrowski, Paul C.: *See*—
Haase, Donald J.; Walker, David G.; and Ostrowski, Paul C., 4,353,840, Cl. 260-448.00R.
Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, to Magyar Aluminiumipari Troszt. Cleaning boiler tubes of digesting heat exchangers used in alum earth processing. 4,353,753, Cl. 134-22.130.
Ott, Helmut: *See*—
Ruchser, Erich; and Ott, Helmut, 4,353,392, Cl. 137-596.160.
Overbury, Douglas G.; and Overy, Colin, to Black & Decker Inc. Automatic oiling system for chain saw. 4,353,163, Cl. 30-123.400.
Overy, Colin: *See*—
Overbury, Douglas G.; and Overy, Colin, 4,353,163, Cl. 30-123.400.
Owens-Corning Fiberglas Corporation: *See*—
Hohman, Charles M.; and Streicher, William L., 4,353,725, Cl. 65-27.000.
Houston, Robert L., 4,353,724, Cl. 65-8.000.
Owens-Illinois, Inc.: *See*—
Rough, Robert R., Sr., 4,353,726, Cl. 65-27.000.
Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, to Nissan Motor Company. Method of producing large-sized ceramic honeycomb structure body by integration of small unit blocks. 4,353,854, Cl. 264-63.000.
Oyamada, Kenji: *See*—
Tada, Kinya; and Oyamada, Kenji, 4,354,148, Cl. 320-20.000.
Ozawa, Kazunori: *See*—
Araseki, Takashi; and Ozawa, Kazunori, 4,354,273, Cl. 375-27.000.
PACCAR Inc.: *See*—
Magnuson, Roland A., 4,353,285, Cl. 89-42.00B.
Page, Bernard F.: *See*—
Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, 4,353,542, Cl. 271-294.000.
Pagels, Louis T.: *See*—
Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., 4,353,398, Cl. 141-91.000.
Palmer, Dalvin S. Apparatus for and method for lifting large objects. 4,353,471, Cl. 212-259.000.
Palmer, Sherwin. Method for making fittings and couplings. 4,353,859, Cl. 264-506.000.
Palti, Yoram. Flow regulator. 4,353,523, Cl. 251-65.000.
Panagin, Romano, to Centro Ricerche Fiat S.p.A. Body for a railway carriage. 4,353,313, Cl. 105-397.000.
Pannekeet, Wilhelmus, to Akzona Incorporated. Process for the regeneration of a sorbent. 4,353,992, Cl. 521-26.000.
Pappenberger, Joerg: *See*—
Hagen, Rolf; Linck, Diethard; and Pappenberger, Joerg, 4,354,261, Cl. 370-42.000.
Paquet, Benoit, to Canada Cycle and Motor Company Limited. Insoles for skate boots. 4,353,173, Cl. 36-44.000.
Paquin, Gregory J.: *See*—
Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., 4,353,436, Cl. 187-9.00R.
Parg, Adolf: *See*—
Acker, Rolf-Dieter; Hamprecht, Gerhard; Parg, Adolf; and Wuerzer, Bruno, 4,353,732, Cl. 71-91.000.
Parish, Roger C.: *See*—
Hedde, Richard D.; and Parish, Roger C., 4,353,902, Cl. 424-250.000.
Parker, Delmer G., to Xerox Corporation. Development system. 4,353,637, Cl. 355-3.0DD.
Parker-Hannifin Corporation: *See*—
Hoffman, Robert K.; and Kavanaugh, Mark A., 4,353,290, Cl. 91-461.000.
Parks, Kevin, to Bendix Corporation, The. Ball joint assembly. 4,353,660, Cl. 403-132.000.
Parr, David T., to BICC Limited. Disconnectable optical fibre joint. 4,353,619, Cl. 350-96.210.
Partin, Norman D.; and Watson, Charles L., to ATN Research & Development Corporation. Valid coin acceptor for coin actuated apparatus. 4,353,453, Cl. 194-100.00A.
Parzygnat, William J., to Xerox Corporation. Self energizing copier document pressure roll. 4,353,541, Cl. 271-275.000.
Passafiume, Anthony, to Johnson & Johnson Baby Products Company. Method for shaping and partitioning a fibrous batt. 4,353,491, Cl. 225-3.000.
Pate, James E.: *See*—
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,353,929, Cl. 426-243.000.
Pater, Walter E., to PPG Industries, Inc. Slotted support logs for sheet shipping containers. 4,353,466, Cl. 206-453.000.
Paterson Products Limited: *See*—
Taylor, Eric, 4,353,644, Cl. 355-72.000.
Pathe, Volker: *See*—
Wilken, Joachim H.; Stehlin, Bernhard; Pathe, Volker; Wamser, Manfred; and Pietzsch, Ludwig, 4,353,446, Cl. 192-21.000.
Patrick, Robert L., Jr. Self-contained ambient precooler attachment for air-cooled condensing units. 4,353,219, Cl. 62-183.000.
Paul, William A. Apparatus for applying gasket-forming material to workpieces. 4,353,775, Cl. 156-540.000.
Paulson, Douglas N.: *See*—
Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.
Paumellerie Electrique: *See*—
Saigne, Gerard, 4,353,185, Cl. 49-351.000.
Pearson, Robert J.; and Buergin, Rodney G. Fire-resistant metal stud. 4,353,192, Cl. 52-281.000.
Pearson, Vernon: *See*—
Linquist, Wayne; and Pearson, Vernon, 4,353,164, Cl. 30-360.000.
Pedgonay, John S. Elastic rebound compensator for rifled gunbarrels. 4,353,181, Cl. 42-78.000.
Pehr, Harold T. Container cap having safety locking means. 4,353,483, Cl. 222-153.000.
Pelerin, Joseph J. Dental kit for performing root canals. 4,353,694, Cl. 433-77.000.
Pellet, Regis J., to Standard Oil Company (Indiana). Hydrotreating catalyst and liquefaction of coal. 4,353,791, Cl. 208-10.000.
Pellet, Regis J.; Bertolacini, Ralph J.; and Lysholm, Donna L., to Standard Oil Company (Indiana). Reforming with an improved platinum-containing catalyst. 4,353,814, Cl. 252-441.000.
Pepper, William, Jr., to Peptek, Incorporated. Touch panel system and method. 4,353,552, Cl. 273-85.00G.
Peppler, William, to Chore-Time Equipment, Inc. Egg counter. 4,354,098, Cl. 235-98.00B.
Peptek, Incorporated: *See*—
Pepper, William, Jr., 4,353,552, Cl. 273-85.00G.
Perisic, Zoran. Advance mechanism. 4,353,493, Cl. 226-158.000.
Perlin, Alfred R., to Metatech Corporation. Calibration device for microsurgical clips. 4,353,250, Cl. 73-161.000.
Peron, Michael C.: *See*—
Clark, Lee K.; and Peron, Michael C., 4,354,278, Cl. 455-617.000.
Perreault, Irenee: *See*—
Chartrand, Joseph A.; and Perreault, Irenee, 4,353,845, Cl. 261-3.000.
Perregaard, Jens K., to Kefalas A/S. Derivatives of 4,5,6,7-tetrahydroisoxazolo [5,4-c] pyridine-3-one, pharmaceutical compositions and methods of treatment. 4,353,910, Cl. 424-256.000.
Perret, Remi: *See*—
Ballu, Vincent; and Perret, Remi, 4,353,876, Cl. 422-263.000.
Perron, Robert: *See*—
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Persson, John A., to Lectromelt Corporation. Lead smelting method. 4,353,738, Cl. 75-10.00R.

Peters, Klaus-Jurgen: *See*—
Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, 4,353,385, Cl. 137-115.000.
Peters, Robert C.: *See*—
Konijnendijk, Willem L.; Peters, Robert C.; and Willemsen, Petrus J. M., 4,354,139, Cl. 313-486.000.
Petershack, Victor D., to Rexnord Inc. Conveyor chain. 4,353,459, Cl. 198-852.000.
Peterson, Edward W.: *See*—
Lagus, Peter L.; and Peterson, Edward W., 4,353,249, Cl. 73-155.000.
Peterson, William R., to United States of America, Energy. Self-aligning lathe chuck jaws. 4,353,561, Cl. 279-123.000.
Petrolite Corporation: *See*—
Thompson, Neil E. S., 4,354,025, Cl. 544-231.000.
Petrus, Alex E. Boron containing, iron-manganese-zirconium master-alloy. 4,353,865, Cl. 420-422.000.
Pettit, George D.: *See*—
Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.
Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 11 β-hydroxy steroids. 4,353,985, Cl. 435-59.000.
Pfister, Jurg R., to Syntex (U.S.A.) Inc. Anticholinergic bronchodilators. 4,353,922, Cl. 424-274.000.
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., to Glaxo Group Limited. 11α-Amino-androstanes. 4,353,898, Cl. 424-238.000.
Picard, Claude; and Daugny, Daniel, to Avions Marcel Dassault-Breguet Aviation; and Societe Anonyme de Recherches de Mecanique Appliquee-Sarma. Connecting rods. 4,353,268, Cl. 74-587.000.
Pickford, Thomas W.: *See*—
Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., 4,354,128, Cl. 310-242.000.
Pieczulewski, Daniel J., to A.G. Davis Gage and Engineering Co. Multiple position rotary index table. 4,353,271, Cl. 74-826.000.
Pierce, Kevin J.: *See*—
Pierce, Michael J.; Pierce, Kevin J.; and Pierce, Wayne A., 4,353,201, Cl. 56-364.000.
Pierce, Lyle R., to Kentrox Industries, Inc. Amplitude equalizer. 4,354,160, Cl. 330-107.000.
Pierce, Michael J.; Pierce, Kevin J.; and Pierce, Wayne A. Crop harvesting apparatus. 4,353,201, Cl. 56-364.000.
Pierce, Wayne A.: *See*—
Pierce, Michael J.; Pierce, Kevin J.; and Pierce, Wayne A., 4,353,201, Cl. 56-364.000.
Pierrel, Michel; and Mertzweiller, Guy, to Pont-A-Mousson S.A. Process and installation for the handling and heat treatment of cast iron or steel pipes and tubes. 4,353,531, Cl. 266-120.000.
Pietschmann, Helmut, to Sybron Corporation. Plural pedal foot control. 4,354,071, Cl. 200-86.500.
Pietzsch, Ludwig: *See*—
Wilken, Joachim H.; Stehlin, Bernhard; Pathe, Volker; Wamser, Manfred; and Pietzsch, Ludwig, 4,353,446, Cl. 192-21.000.
Pissiotas, Georg: *See*—
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Pitkjaan, Elam: *See*—
Martin, Jack; and Pitkjaan, Elam, 4,354,137, Cl. 313-222.000.
Pitney Bowes Inc.: *See*—
Chang, Mike S. H.; and Edelman, Peter G., 4,353,971, Cl. 430-58.000.
Pittalis, Francesco: *See*—
Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, 4,353,996, Cl. 523-105.000.
Planzo, Carmine S. Personal data bank system. 4,354,260, Cl. 368-10.000.
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, to BASF Atiengesellschaft. Substituted 3-aminopyrazoles. 4,354,031, Cl. 548-362.000.
Poggemiller, Erhard; and Sweet, Ralph, to Kep Enterprises. Hydraulic reset for tillage and seeding equipment. 4,353,423, Cl. 172-260.500.
Polaneczky, Aloysius J. Keyed computer reel and sealing ring assembly. 4,353,462, Cl. 206-53.000.
Polaroid Corporation: *See*—
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,353,976, Cl. 430-251.000.
Gerber, Arthur M.; Slafer, Warren D.; and Walworth, Vivian K., 4,353,977, Cl. 430-256.000.
Polhemus, Marlan H.; and Ferrante, Peter L., to Tenex Corporation. Vertically stackable tray set. 4,353,470, Cl. 211-126.000.
Poll, Martin: *See*—
Covi, Christian; and Poll, Martin, 4,353,765, Cl. 156-212.000.
Pollard, Maurice G.; and Illingworth, Robert, to British Railways Board. Motorized railway vehicle truck. 4,353,309, Cl. 105-136.000.
Polyzoides, Apostolos J.; and Tsakonas, Athanassios. Endoprosthetic knee joint. 4,353,136, Cl. 3-1.911.
Pont-A-Mousson S.A.: *See*—
Pierrel, Michel; and Mertzweiller, Guy, 4,353,531, Cl. 266-120.000.
Poole, Michael J.: *See*—
Goode, Philip D.; Poole, Michael J.; and Proctor, Gordon W., 4,354,113, Cl. 250-423.00R.
Pope, Daniel F.: *See*—
Miller, Christopher S.; Pope, Daniel F.; and Hokanson, Jon V., 4,354,244, Cl. 364-556.000.
Portec, Inc.: *See*—
Blakeslee, Thomas R., 4,354,235, Cl. 364-424.000.
Post, Lothar: *See*—
Muck, Karl-Friedrich; Post, Lothar; and Westen, Hannes, 4,353,856, Cl. 264-240.000.
Potthast, Ruthard; Mentzel, Werner; and Kramer, Horst-Dieter, to Bayer Aktiengesellschaft. Process for the preparation of 3-hydroxybenzoic acid. 4,354,038, Cl. 562-475.000.
PPG Industries, Inc.: *See*—
Hoekje, Howard H., 4,353,885, Cl. 423-289.000.
Pater, Walter E., 4,353,466, Cl. 206-453.000.
Slabach, John C., Jr.; and Kelly, Joseph B., 4,353,728, Cl. 65-273.000.
Strong, Walker A., 4,354,032, Cl. 560-41.000.
Prabhu, K. N. Srinivas: *See*—
Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, 4,353,794, Cl. 208-321.000.
Prakash, Sri, to Union Carbide Corporation. Method of making capacitor with CO-fired end terminations. 4,353,153, Cl. 29-25.420.
Procor Limited-Procor Limitee: *See*—
Tse, Samuel Y., 4,353,852, Cl. 264-37.000.
Procter & Gamble Company, The: *See*—
Wong, Louis F., 4,353,866, Cl. 422-37.000.
Proctor, Gordon W.: *See*—
Goode, Philip D.; Poole, Michael J.; and Proctor, Gordon W., 4,354,113, Cl. 250-423.00R.
Prox, Axel: *See*—
Diederen, Willi; Prox, Axel; Reuter, Albert; Roth, Willy; and Schmid, Jochen, 4,353,909, Cl. 424-256.000.
Pryor, Michael J., to Olin Corporation. Electromagnetic thin strip casting apparatus. 4,353,408, Cl. 164-503.000.
Przybysz, John X., to Westinghouse Electric Corp. Wet chemical etching of III/V semiconductor material without gas evolution. 4,353,779, Cl. 156-659.100.
Pullman Incorporated: *See*—
Miller, Roy W.; and Mutyala, Bhaskara R., 4,353,314, Cl. 105-410.000.
Putt, James B., to Bendix Corporation, The. Hydraulic brake booster. 4,353,209, Cl. 60-547.00B.
Quadrex Corporation: *See*—
Martin, Archer J. P., 4,353,243, Cl. 73-23.100.
Quaker Oats Company, The: *See*—
Bone, David P., 4,353,932, Cl. 426-532.000.
Quatrini, Lucretia R.; Terlizzi, Marie B.; and Martin, Brice E., to GTE Products Corporation. Tungsten recovery from tungsten ore concentrates by caustic digestion. 4,353,878, Cl. 423-53.000.
Quatrini, Lucretia R.; and Martin, Brice E., to GTE Products Corporation. Tungsten recovery from tungsten ore concentrates by caustic digestion. 4,353,879, Cl. 423-53.000.
Quatrini, Lucretia R., to GTE Products Corporation. Tungsten recovery from tungsten ore concentrates by caustic digestion. 4,353,880, Cl. 423-53.000.
Quatrini, Lucretia R.; Vogt, Martin C.; and Martin, Brice E., to GTE Products Corporation. Tungsten recovery from tungsten ore concentrates by caustic digestion. 4,353,881, Cl. 423-58.000.
Quinn, James R.: *See*—
Linnert, Peter J.; and Quinn, James R., 4,353,682, Cl. 417-295.000.
Quittkat, Wolfram, to BKMI Industrieanlagen GmbH. Method of firing carbonate-containing minerals. 4,353,750, Cl. 106-100.000.
Quoy, Andre: *See*—
Billottet, Henri; Augy, Henri; and Quoy, Andre, 4,353,284, Cl. 89-40.00B.
R. R. Donnelley & Sons Company: *See*—
Schniter, Jorg, 4,353,393, Cl. 137-624.200.
Rado, Robert J. Portable tray for mechanics sockets. 4,353,465, Cl. 206-378.000.
Radvanyi nee Hegedus, Belane: *See*—
Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
Rae, John R.: *See*—
Osborn, Norbert L.; and Rae, John R., 4,353,685, Cl. 417-406.000.
Ragen, Robert P., to Clum Manufacturing Co., Inc. Slide switch. 4,354,069, Cl. 200-16.00R.
Raisin, Jean P.: *See*—
Doyen, Joel; and Raisin, Jean P., 4,353,539, Cl. 271-10.000.
Raquet, Erwin; and Klatt, Richard, to Fried. Krupp Huttenwerke AG. Vibration damped railway wheel. 4,353,586, Cl. 295-7.000.
Rashbrook, Robert B.; and Horner, Patrick J., to Imperial Chemical Industries Limited. Method of preparing polyesters modified with trihydroxybenzophenone. 4,354,016, Cl. 528-128.000.
Raven, Clive A.; and Sampson, Alan J., to Shell Oil Company. Herbicide mixture. 4,353,733, Cl. 71-93.000.
Ray, Donald J.; and Woodrich, Kenneth H., to Ford Motor Company. Method for making plastic panel and panel. 4,353,857, Cl. 264-258.000.
Ray, Louis F.; and Azar, David G., Sr. Process of producing a useful soil cement product from industrial chemical waste. 4,353,749, Cl. 106-97.000.
Ray, Ranjan, to Allied Corporation. Method of making metallic glass powders from glassy alloys. 4,353,737, Cl. 75-0.50R.
Raychem Corporation: *See*—
Gotcher, Alan J.; and Germeraad, Paul B., 4,353,961, Cl. 428-380.000.
Rayment, David J.; and Kruger, Hendrik R., to Computrol Systems, Ltd. Electronic identification system. 4,354,099, Cl. 235-449.000.

RCA Corporation: *See—*
Dingwall, Andrew G. F., 4,354,151, Cl. 323-225.000.
Gale, Michael T.; and Kane, James, 4,353,622, Cl. 350-162.0SF.
Harlan, Wayne E., 4,354,202, Cl. 358-183.000.
Hsu, Sheng T., 4,353,159, Cl. 29-571.000.
Stewart, Roger G., 4,354,255, Cl. 365-154.000.
Re, Luciano; Brant, Alberto; and Bassignani, Luciano, to Snamprogetti, S.p.A. 5,6-Dehydropenicillins. 4,353,825, Cl. 260-239.100.
Rebbe, Klaus; and Welimann, Klaus, to Clinicon International GmbH. Blood pressure cuff. 4,353,374, Cl. 128-686.000.
Reddemann, Jorg: *See—*
Bergmann, Horst; and Reddemann, Jorg, 4,353,344, Cl. 123-569.000.
Reed, Michael E.: *See—*
Mumma, Harold J.; and Reed, Michael E., 4,353,455, Cl. 198-384.000.
Regie Nationale des Usines Renault: *See—*
Lamy, Jean M.; and Egret, Jacques, 4,353,449, Cl. 192-82.00R.
Regner, Richard: *See—*
Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, 4,353,939, Cl. 427-238.000.
Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, 4,353,940, Cl. 427-238.000.
Rehrig, Richard B. Gas shielded welding torch. 4,354,088, Cl. 219-75.000.
Reitberger, Peter H., to NCR Corporation. Ink jet printer drive means. 4,354,197, Cl. 346-140.00R.
Rembold, Helmut: *See—*
Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, 4,353,272, Cl. 74-859.000.
Rems-Werk Christian Foll und Sohne GmbH & Co.: *See—*
Wagner, Rudolf, 4,353,154, Cl. 29-27.00A.
Rendall, John S. Extraction process. 4,353,877, Cl. 423-6.000.
Renga, James M.: *See—*
Strege, Paul E.; and Renga, James M., 4,353,831, Cl. 549-229.000.
Reschovsky, John M., to General Electric Company. Rotor measurement system using reflected load transmission. 4,354,190, Cl. 340-870.180.
Resonant Technology Company: *See—*
Gurries, Raymond A., 4,353,175, Cl. 37-101.000.
Reuter, Albert: *See—*
Diederen, Willi; Prox, Axel; Reuter, Albert; Roth, Willy; and Schmid, Jochen, 4,353,909, Cl. 424-256.000.
Reutter, Hubert F.: *See—*
Damke, Otto; and Reutter, Hubert F., 4,353,510, Cl. 242-118.320.
Rexnord Inc.: *See—*
Corey, Dennis J., 4,353,704, Cl. 464-72.000.
Petershack, Victor D., 4,353,459, Cl. 198-852.000.
Reynolds, Blake: *See—*
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Rhoades, James J. Dally practice apparatus. 4,353,546, Cl. 272-117.000.
Rhodes, Joseph C., Jr.: *See—*
Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., 4,354,228, Cl. 364-200.000.
Rhodic: *See—*
Ballu, Vincent; and Perret, Remi, 4,353,876, Cl. 422-263.000.
Rhone-Poulenc Industries: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,353,844, Cl. 260-549.000.
Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., to Ricon Corp. Manual wheelchair lift. 4,353,436, Cl. 187-9.00R.
Richter, Albert P., Jr.; and Campsey, Ronald L., to Texaco Inc. Chamber for measuring gamma ray emissions. 4,354,110, Cl. 250-358.100.
Richter, George N.: *See—*
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Rickelton, William A.; Robertson, Allan J.; and Burley, David R., to American Cyanamid Company. Selective extraction of cobalt(II) from aqueous solutions with phosphinic acid extractants. 4,353,883, Cl. 423-139.000.
Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method of blasting pillars with vertical blastholes. 4,353,598, Cl. 299-2.000.
Ricoh Co., Ltd.: *See—*
Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.
Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, 4,353,299, Cl. 101-144.000.
Tenmyo, Shigemoto; and Koide, Hiroshi, 4,354,146, Cl. 318-341.000.
Ricon Corp.: *See—*
Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., 4,353,436, Cl. 187-9.00R.
Rieter Machine Works Ltd.: *See—*
Demuth, Robert; and Wuest, Anton, 4,353,149, Cl. 19-107.000.
Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, 4,353,667, Cl. 406-29.000.
Novak, Peter; and Gasser, Hermann, 4,353,202, Cl. 57-279.000.
Rion Kabushiki Kaisha: *See—*
Marutake, Yozo; Kurita, Takayuki; and Fukutome, Tatsuro, 4,354,061, Cl. 179-82.000.
Rippel, Wally E.; and Edwards, Dean B., to California Institute of Technology. Quasi-bipolar battery construction and method of fabricating. 4,353,969, Cl. 429-144.000.
Riquart, Christian: *See—*
Carre, Jean-Jacques; and Riquart, Christian, 4,353,599, Cl. 303-22.00R.
Risacher, Gerard H., to Therm-O-Disc, Incorporated. Thermostat with positive off element. 4,354,170, Cl. 337-334.000.
Risener, George W.; and Risener, R. V. Case and carton handling device. 4,353,675, Cl. 414-403.000.
Risener, R. V.: *See—*
Risener, George W.; and Risener, R. V., 4,353,675, Cl. 414-403.000.
Ritsema, Irving R., to Bendix Corporation, The. Drum brake with combined adjuster and wheel cylinder. 4,353,439, Cl. 188-79.5GE.
Ritter, Gerhard: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,353,678, Cl. 414-748.000.
Ritter, Josef: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,353,678, Cl. 414-748.000.
Ritter, Klaus: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,353,678, Cl. 414-748.000.
Rizkalla, Nabil, to Halcon SD Group, Inc., The. Preparation of carboxylic acid esters. 4,354,036, Cl. 560-233.000.
Robbins, Max L.: *See—*
Canter, Nathan H.; Robbins, Max L.; and Baker, Edward G., 4,353,806, Cl. 252-8.55D.
Robert Bosch GmbH: *See—*
Frey, Wunibald, 4,354,182, Cl. 340-650.000.
Henning, Manfred, 4,353,341, Cl. 123-414.000.
Kofink, Wolfgang, 4,354,150, Cl. 322-63.000.
Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, 4,353,385, Cl. 137-115.000.
Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, 4,353,272, Cl. 74-859.000.
Straubel, Max; Konrath, Karl; and Brink, Gerhard, 4,353,340, Cl. 123-365.000.
Trachte, Dietrich, 4,353,343, Cl. 123-502.000.
Robert, Daniel, to Societe Anonyme de Recherches de Mecanique Appliquee. Control rod or power transmission rod. 4,353,267, Cl. 74-579.00R.
Roberts, James K.; and Johannesen, Donald D., to Bendix Corporation, The. Adjuster for drum brakes. 4,353,437, Cl. 188-79.5GE.
Roberts, James K., to Bendix Corporation, The. Dual mode drum brake. 4,353,441, Cl. 188-328.000.
Robertson, Allan J.: *See—*
Rickelton, William A.; Robertson, Allan J.; and Burley, David R., 4,353,883, Cl. 423-139.000.
Rockcor, Inc.: *See—*
Weglin, Walter; and Daly, James M., 4,353,322, Cl. 116-34.00B.
Rockwell International Corporation: *See—*
Hon, John F., 4,354,271, Cl. 372-19.000.
Schorr, Ian A.; and Beegle, Mark J., 4,354,159, Cl. 330-86.000.
Yao, Shi-Kay, 4,354,247, Cl. 364-713.000.
Rodzen, Richard A.: *See—*
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., 4,353,373, Cl. 128-641.000.
Rogers, Lionel J.: *See—*
Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., 4,353,882, Cl. 423-111.000.
Rogers, Wanda S. Jewelry for animals. 4,353,225, Cl. 63-13.000.
Rohde, Wilhelm, to Linde Aktiengesellschaft. Process and apparatus for the regeneration of an adsorber. 4,353,716, Cl. 55-59.000.
Rohen, James E., to International Business Machines Corporation. Scannable readout device. 4,354,100, Cl. 235-449.000.
Rohr, Wolfgang: *See—*
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,354,031, Cl. 548-362.000.
Rohrbach, Peter H.; and Hale, Robert A., to Si Handling Systems, Inc. Driverless vehicle with two way accumulation. 4,353,306, Cl. 104-166.000.
Rohrbacher, Herbert E. Apparatus for rolling chain link fence. 4,353,512, Cl. 242-54.00R.
Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Field flow fractionation channel. 4,353,795, Cl. 209-155.000.
Roos, Leo: *See—*
Leberzammer, Ernst; and Roos, Leo, 4,353,978, Cl. 430-302.000.
Rosaen, Oscar E. Rotary engine. 4,353,337, Cl. 123-243.000.
Rosaz, Guy F., to Scovill Inc. Machine for positioning valves on rims for tubeless tires. 4,353,156, Cl. 29-221.500.
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, to Hoechst Aktiengesellschaft. Process for separating water from mixtures thereof with vinyl acetate and acetic acid. 4,353,783, Cl. 203-14.000.
Rose, Francis: *See—*
Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, 4,353,903, Cl. 424-250.000.
Ross, Michael S.: *See—*
Shah, Hasmukh R.; and Ross, Michael S., 4,353,452, Cl. 194-100.00A.
Rossman, Robert A.: *See—*
O'Connor, Arthur H.; and Rossman, Robert A., 4,353,152, Cl. 128-689.000.

Rotaque (Proprietary) Limited: *See—*
Brouwer, Cornelis, 4,353,312, Cl. 105-241.200.

Roth, Willy: *See—*
Diederen, Willi; Prox, Axel; Reuter, Albert; Roth, Willy; and Schmid, Jochen, 4,353,909, Cl. 424-256.000.

Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, to BASF Aktiengesellschaft. Continuous preparation of polycaprolactam in vertical tubular reactor. 4,354,020, Cl. 528-323.000.

Rough, Robert R., Sr., to Owens-Illinois, Inc. Method and apparatus for preheating pulverous materials prior to their introduction into a melting furnace. 4,353,726, Cl. 65-27.000.

Round, Robert T., to Texasgulf Inc. Shield for gas sampling probe. 4,353,260, Cl. 73-863.410.

Roussel Uclaf: *See—*
Teutsch, Jean G.; and Deraedt, Roger, 4,353,899, Cl. 424-243.000.

Ruchser, Erich; and Ott, Helmut, to Technomatic AG. Safety valve assembly. 4,353,392, Cl. 137-596.160.

Rudolph, Peter K. C., to Boeing Company, The. Flap assembly for aircraft wing. 4,353,517, Cl. 244-216.000.

Ruip, Terrence M., to Goodyear Tire & Rubber Company, The. Pneumatic tire having air escape means. 4,353,403, Cl. 152-353.00R.

Ruml, Milan: *See—*
Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, 4,353,368, Cl. 128-214.00R.

Ruther, Hubert. Exhibition/house furniture as well as play and sport equipment. 4,353,661, Cl. 403-171.000.

Rutt, Truman C.; and Stynes, James A., to Tam Ceramics Inc. Ceramic matrices for electronic devices and process for forming same. 4,353,957, Cl. 428-292.000.

Ruyten, Henricus M.; and Hoefnagels, Johannes F., to U.S. Philips Corporation. Adjustable torsion-spring slipping clutch. 4,353,226, Cl. 464-40.000.

Ryan, Charles P., to Honeywell Information Systems Inc. Cache memory command buffer circuit. 4,354,232, Cl. 364-200.000.

Ryan, John O.; and Corkery, Joseph L., to Ampex Corporation. Two dimensional interpolation circuit for spatial and shading error corrector systems. 4,354,243, Cl. 364-515.000.

Ryobi, Limited: *See—*
Fujisawa, Nobuhiko; and Honkawa, Yoshinori, 4,353,297, Cl. 101-77.000.

S. C. Johnson & Son, Inc.: *See—*
de Jager, Jan, 4,353,786, Cl. 204-144.000.

S.I.C., Inc.: *See—*
Chandler, Donald A.; and Harper, John W., 4,354,058, Cl. 179-1.0MN.

Saab-Scania Aktiebolag: *See—*
Sjoqvist, Carl D. I.; and Soderberg, Tage E., 4,353,430, Cl. 180-90.000.

Sabo, Michael K.: *See—*
Giulie, Joseph D.; and Sabo, Michael K., 4,353,776, Cl. 156-555.000.

Sachdev, Krishna G.: *See—*
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,353,976, Cl. 430-251.000.

Sachs-Systemtechnik GmbH: *See—*
Tellert, Rudy; and Fischer, Wolfgang, 4,354,082, Cl. 219-10.49R.

Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Godard, Pierre; and Billot, Michel, 4,353,410, Cl. 165-18.000.

Saigne, Gerard, to Paumellerie Electrique. Window raiser. 4,353,185, Cl. 49-351.000.

St. Clair, Roger L.: *See—*
Burow, Kenneth W., Jr.; and St. Clair, Roger L., 4,354,030, Cl. 548-247.000.

St. Georgiev, Vassil: *See—*
Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, 4,354,027, Cl. 544-346.000.

Saito, Syuichiro; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Electromagnetically driven shutter device. 4,353,632, Cl. 354-133.000.

Saito, Tasuku: *See—*
Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.

Sakai, Hideyuki: *See—*
Maruyama, Masanori; Mizushima, Masashi; Fukushima, Masakazu; Miyamoto, Satoru; and Sakai, Hideyuki, 4,354,138, Cl. 313-440.000.

Sakai, Hiromitsu: *See—*
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,353,933, Cl. 427-8.000.

Sakai, Takeya: *See—*
Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.

Salani, Chittaranjan, to Koehring Company, The. Multi-position amplitude device. 4,353,261, Cl. 74-87.000.

Salomon, Georges P. J., to Etablissements Francois Salomon & Fils. System for binding a boot to a ski. 4,353,576, Cl. 280-615.000.

Salzgitter AG: *See—*
Osterlitz, Hermann, 4,354,087, Cl. 219-73.200.

Sampson, Alan J.: *See—*
Raven, Clive A.; and Sampson, Alan J., 4,353,733, Cl. 71-93.000.

Sampson, Arthur J., to Johnson & Johnson. Flocked, foam-coated, water vapor permeable, bacterial barrier. 4,353,945, Cl. 428-90.000.

Sanderson, Dewey S. C. Changeable wall panel structure. 4,353,193, Cl. 52-311.000.

Santek, Inc.: *See—*
Michel, Thomas J.; and Finger, Richard H., 4,354,268, Cl. 371-20.000.

Sanyo Electric Co., Ltd.: *See—*
Tada, Kinya; and Oyamada, Kenji, 4,354,148, Cl. 320-20.000.

Sasaki, Noriaki: *See—*
Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.

Sasaki, Tohru: *See—*
Endo, Hiroyuki; Ohhira, Hiroshi; and Sasaki, Tohru, 4,353,960, Cl. 428-373.000.

Sato, Fumitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Memory board automatically assigned its address range by its position. 4,354,258, Cl. 365-230.000.

Sato, Hisao. Clip driver. 4,353,157, Cl. 29-243.560.

Sato, Masato; and Yamashita, Masanobu, to Kawasaki Jukogyo Kabushiki Kaisha. Fuel supply system for small engine. 4,353,847, Cl. 261-36.00A.

Sato, Takao, to Hitachi, Ltd. Manipulation-variable separated type system control method and apparatus. 4,354,224, Cl. 364-183.000.

Sato, Tetsuo; and Kominami, Yasuo, to Hitachi, Ltd. Recording/playing circuit. 4,354,209, Cl. 360-61.000.

Sato, Yuji: *See—*
Takeyasu, Isaburo; Nagamachi, Koichi; and Sato, Yuji, 4,354,172, Cl. 340-29.000.

Sattur, Pralhad B.: *See—*
Bhanumati, Nanduri; and Sattur, Pralhad B., 4,354,033, Cl. 560-48.000.

Saunders, James F.; and Krocker, Robert E., to Trane Company, The. Apparatus and method for controlling a variable air volume temperature conditioning system. 4,353,409, Cl. 165-2.000.

Saur, Charles W., to Lear Siegler, Inc. Belt supports for accumulators. 4,353,458, Cl. 198-781.000.

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Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.

Schaller, Wolfgang: *See—*
Deter, Christhard; Schaller, Wolfgang; Schonfeld, Rudolf; and Haak, Klaus, 4,353,538, Cl. 271-3.000.

Schaubel, Charles: *See—*
Self, James M.; and Schaubel, Charles, 4,353,556, Cl. 273-186.00A.

Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, to Boehringer Mannheim GmbH. Cardenolide-bis-digitoxoside alkyl compounds, pharmaceutical compositions and method of use. 4,353,895, Cl. 424-182.000.

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Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., 4,353,952, Cl. 428-201.000.

Scheibel, Edward G.: *See—*
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Schenck, Ray B.; and Schmidt, Wilhelm. Slash gathering vehicle. 4,353,424, Cl. 172-438.000.

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Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,353,985, Cl. 435-59.000.

Schiemann, Heinz, to Siemens Aktiengesellschaft. Measuring transformer for high-voltage switch-gear with metal encapsulation. 4,354,154, Cl. 324-126.000.

Schilbe, Laird W. Joining corners and intersections in a log building construction. 4,353,191, Cl. 52-233.000.

Schilling, Walter W., to MacMillan Bloedel Limited. Rotatable splitter. 4,353,401, Cl. 144-193.00A.

Schindler, Peter; and Huber, Gerhard, to Hoechst Aktiengesellschaft. Chromophoric cephalosporins. 4,353,824, Cl. 260-156.000.

Schindler, Rudolf: *See—*
Grimm, Wilhelm G.; and Schindler, Rudolf, 4,353,964, Cl. 428-408.000.

Schmid, Jochen: *See—*
Diederen, Willi; Prox, Axel; Reuter, Albert; Roth, Willy; and Schmid, Jochen, 4,353,909, Cl. 424-256.000.

Schmidt, Gunther: *See—*
Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.

Schmidt, Karl-Heinz: *See*—
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.
Schmidt, Walter: *See*—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.
Schmidt, Wilhelm: *See*—
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Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., to Suntech, Inc. Process to upgrade coal liquids by extraction prior to hydrodenitrogenation. 4,353,792, Cl. 208-254.00H.
Schneider, Clayton J., Jr., to Calspan Corporation. Fiber optic acceleration sensor. 4,353,259, Cl. 73-653.000.
Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, to Robert Bosch GmbH. Apparatus for controlling the operation of the engine-transmission assembly of a motor vehicle. 4,353,272, Cl. 74-859.000.
Schneider, Henri W., to U.S. Philips Corporation. Device for dividing a recurrent input signal by a non-integer divisor f, notably by f=N−½. 4,354,188, Cl. 340-814.000.
Schneider, Ralph J.: *See*—
Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., 4,354,074, Cl. 200-153.00J.
Schneiter, John W.; and Hogan, Lawrence R., to Container Technologies, Inc. Flexible container with displaceable fitting and probe coupler apparatus. 4,353,488, Cl. 222-501.000.
Schniter, Jorg, to R. R. Donnelley & Sons Company. Selective shutoff for repetitively operated valve. 4,353,393, Cl. 137-624.200.
Schnittker, George. Fence painting apparatus. 4,353,324, Cl. 118-207.000.
Schonfeld, Rudolf: *See*—
Deter, Christhard; Schaller, Wolfgang; Schonfeld, Rudolf; and Haak, Klaus, 4,353,538, Cl. 271-3.000.
Schornack, Louis W., to Dynascan Corporation. Daily variability timer. 4,354,120, Cl. 307-132.00E.
Schorr, Ian A.; and Beegle, Mark J., to Rockwell International Corporation. Prescription attenuator having cascaded L-pad sections. 4,354,159, Cl. 330-86.000.
Schroeder, George F.; and Demers, Edward A., to Singer Company, The. Control circuit for electro-static accelerometer. 4,353,254, Cl. 73-517.00B.
Schuler, Murry W. Combine having separating and cleaning apparatus. 4,353,376, Cl. 130-27.00T.
Schultz, Ronald L., to TRW Inc. Optical fiber connector construction. 4,353,620, Cl. 350-96.210.
Schulz, Rainer; and Schulz, Wilfried. Pleated filter pack and method of making same. 4,353,723, Cl. 55-521.000.
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Schulz, Rainer; and Schulz, Wilfried, 4,353,723, Cl. 55-521.000.
Schummer, Helmut: *See*—
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Schuster, Georg, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking system for rotary offset printing machine. 4,353,300, Cl. 101-365.000.
Schwarz, Richard, to Cosden Technology, Inc. Method for controlling adduct formation in production of acrylonitrile-butadiene-styrene-acrylate copolymers. 4,354,005, Cl. 525-257.000.
Schwob, Hans-Peter; and Soppelsa, Peter, to Lasag S.A. Solid crystal laser emission device with an improved external cooling circuit. 4,354,272, Cl. 372-36.000.
Scoarnec, Louis; and Herbert, Patrick, to Compagnie des Lampes. Solar energy transfer member for introduction into an envelope of a solar collector. 4,353,354, Cl. 126-443.000.
Scola, Daniel A., to United Technologies Corporation. Aliphatic diene bis-imide polymers. 4,354,012, Cl. 526-259.000.
Scott Bader Company Limited: *See*—
Alexander, Ian J.; and Scott, Roger J., 4,353,787, Cl. 204-159.150.
Scott, Brian L., to Scott Instruments Company. Vibratory aid for presbycusis. 4,354,064, Cl. 179-107.0BC.
Scott, George V., to Colgate-Palmolive Company. Stabilization of carrageenan-containing toothpaste. 4,353,890, Cl. 424-49.000.
Scott, Gerald. Process for preparing oxidatively-stable polymers. 4,354,007, Cl. 525-370.000.
Scott Instruments Company: *See*—
Scott, Brian L., 4,354,064, Cl. 179-107.0BC.
Scott-Jackson, Dennis G.; and Lim, Hui C., to Windsor Machine Company Limited. Sprocket and clutch drum assembly. 4,353,705, Cl. 474-158.000.
Scott, Roger J.: *See*—
Alexander, Ian J.; and Scott, Roger J., 4,353,787, Cl. 204-159.150.
Scovill Inc.: *See*—
Rosaz, Guy F., 4,353,156, Cl. 29-221.500.
Sea Trec Enterprises, Ltd.: *See*—
Lotoski, John G. D., 4,353,203, Cl. 59-85.000.
Seago, Marvin E. Food storage building. 4,353,188, Cl. 52-93.000.
Sealed Air Corporation: *See*—
Vandenbossche, Benjamin E., 4,353,356, Cl. 126-450.000.
Sears, Roebuck and Co.: *See*—
Gall, John C., 4,354,222, Cl. 362-352.000.
Seasonmakers Pty. (Australia) Lts: *See*—
Bowers, Geoffrey, 4,353,946, Cl. 428-109.000.
Seberg, Charles H.: *See*—
Muetterties, Andrew J.; Genese, Joseph N.; and Seberg, Charles H., 4,353,369, Cl. 128-214.400.
Sechet, Claude; Babonneau, Gerard; and Guillou, Louis C., to Etablissement Public de Diffusion Dit: Telediffusion de France; and Babonneau, Gerard. Television system with access control. 4,354,201, Cl. 358-122.000.
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Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.
Seed, Kenneth J., to Barba Grill Inc. Portable cooker. 4,353,347, Cl. 126-41.00R.
Seelig, Henri F.: *See*—
Janssen, Wilhelm; and Seelig, Henri F., 4,353,534, Cl. 266-270.000.
Seeliger, Christian: *See*—
Hellwig, Friedrich-Wilhelm; and Seeliger, Christian, 4,354,251, Cl. 364-900.000.
Seemann, Ronald W., to Minnesota Mining and Manufacturing Company. Resin-containing cartridges and process for sealing solid structures or for anchoring bolts and rods therein. 4,353,463, Cl. 206-220.000.
Sefton, Michael V. Encapsulation of live animal cells. 4,353,888, Cl. 424-25.000.
Seibel, Eberhard: *See*—
Farber, Horst; Fritze, Heinz; and Seibel, Eberhard, 4,353,246, Cl. 73-61.400.
Seiko Koki Kabushiki Kaisha: *See*—
Takazawa, Yuzuru; and Nagaoka, Shinji, 4,353,631, Cl. 354-51.000.
Seitz, Alfred, to U.S. Philips Corporation. Circuit arrangement for the pulsed illumination of a stroboscope ring. 4,354,142, Cl. 315-241.00S.
Sekine, Kenji: *See*—
Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, 4,354,191, Cl. 343-7.500.
Self, James M.; and Schaubel, Charles, to Golf Bands Products/-Louisianna Partnership. Golf club swing training aid. 4,353,556, Cl. 273-186.00A.
Seliger, Ewald; Dudar, Klaus; Stohr, Gunter; Millner, Rudolf; and Banse, Wilhelm, to Veb Rationalisiering Halle. Method of and an apparatus for treating fish material to make the same ready for consumption. 4,353,928, Cl. 426-238.000.
Sempliner, Arthur T.: *See*—
Teague, W. Dorwin, Jr.; and Sempliner, Arthur T., 4,353,141, Cl. 15-22.00R.
Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Maleimide and succinimide derivatives and herbicidal method of use thereof. 4,353,734, Cl. 71-95.000.
Serras-Paulet, Edouard. Push-button or keyboard with depressable keys. 4,354,081, Cl. 200-340.000.
Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., to Ferris Manufacturing Corp. EKG Electrode and package. 4,353,373, Cl. 128-641.000.
Settef S.p.A.: *See*—
Vecchiato, Antonio, 4,354,000, Cl. 524-388.000.
Seymour, Shaun A., to Sperry Corporation. Guide for leaf stripping apparatus. 4,353,377, Cl. 130-30.00R.
Seymour, Shaun A., to Sperry Corporation. Tobacco stalk guide assist. 4,353,378, Cl. 130-31.00R.
Seymour, Shaun A.: *See*—
Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., 4,353,199, Cl. 56-10.200.
Shah, Hasmukh R.; and Ross, Michael S., to U.M.C. Industries, Inc. Coin-handling device. 4,353,452, Cl. 194-100.00A.
Shanks, Howard R.: *See*—
Jeffrey, Frank R.; and Shanks, Howard R., 4,353,788, Cl. 204-192.00S.
Sharp Kabushiki Kaisha: *See*—
Shimizu, Masahiro, 4,353,274, Cl. 83-156.000.
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Shelcore, Inc.: *See*—
Greenberg, Sheldon, 4,353,701, Cl. 434-259.000.
Shell Oil Company: *See*—
Hughes, Patrick M.; Chatterjee, Ananda M.; and Hwo, Charles C., 4,354,004, Cl. 525-240.000.
Raven, Clive A.; and Sampson, Alan J., 4,353,733, Cl. 71-93.000.
Sherer, Paul: *See*—
Hester, Gerald P.; and Sherer, Paul, 4,354,101, Cl. 235-463.000.
Sherman, Robert H.: *See*—
Bartlit, John R.; Denton, William H.; and Sherman, Robert H., 4,353,871, Cl. 422-159.000.
Sherwood Medical Industries Inc.: *See*—
Joslin, Joel A.; and Dennison, Marshall T., 4,353,868, Cl. 422-101.000.
Shields, Harper; and Farrell, Roscoe M., to Kayser-Roth Hosiery, Inc. Tension indicator for elastomeric yarn. 4,353,227, Cl. 66-146.000.
Shields, Harper; and Farrell, Roscoe M., to Kayser-Roth Hosiery, Inc. Circular knitting machine with latch detector. 4,353,228, Cl. 66-157.000.
Shima, Takeshi; and Torii, Ken-ichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital phase comparator circuit. 4,354,124, Cl. 307-522.000.
Shimizu, Masahiro, to Sharp Kabushiki Kaisha. Roll paper feeding and cutting system. 4,353,274, Cl. 83-156.000.

Shimizu, Masahiro, to Sharp Kabushiki Kaisha. Roll-paper setting mechanism. 4,353,511, Cl. 242-55.530.

Shinagawa, Akihiro: *See*—
Kanai, Hideo; Shinagawa, Akihiro; Yamazaki, Takahiko; and Itai, Reiichi, 4,353,790, Cl. 204-290.00F.

Shingai, Hiroshi: *See*—
Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, 4,353,217, Cl. 60-693.000.

Shiono, Shigeo: *See*—
Warabisako, Terunori; and Shiono, Shigeo, 4,354,115, Cl. 250-551.000.

Shirahata, Kunikatsu: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.

Shiurila, John, to Centronics Data Computer Corp. Direct ink delivery system for print heads utilizing adjustable means for controlling ink flows. 4,353,654, Cl. 400-124.000.

Shoup, Gary L., to Jerr-Dan Corporation. Readily removable and replaceable wear pads for sliding bed vehicles. 4,353,597, Cl. 298-12.000.

Showell, Graham A., to Beecham Group Limited. Chromanol derivatives and their use for treating hypertension. 4,353,906, Cl. 424-251.000.

Shroyer, Ronald G. Aquarium/picture combination. 4,353,327, Cl. 119-5.000.

Si Handling Systems, Inc.: *See*—
Rohrbach, Peter H.; and Hale, Robert A., 4,353,306, Cl. 104-166.000.

Sibata, Masaharu: *See*—
Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, 4,353,796, Cl. 209-240.000.

Siddiqi, Iqbal, to Battelle Memorial Institute. Analytical process and means for measuring the amount of hydrogen peroxide in aqueous media and of organic substrates generating hydrogen peroxide by enzymatic oxidation. 4,353,983, Cl. 435-11.000.

Siebens, Larry N.; and Borgstrom, Alan D., to Amerace Corporation. Bushing well stud construction. 4,353,611, Cl. 339-92.00R.

Siegl, Ludwig R.: *See*—
Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.

Siemens Aktiengesellschaft: *See*—
Bayati, Abutorab, 4,354,158, Cl. 328-75.000.
Borburgh, Jacques; and Feight, Ingmar, 4,354,132, Cl. 310-334.000.
Buettner, Gerhard, 4,354,065, Cl. 179-107.00H.
Hagen, Rolf; Linck, Diethard; and Pappenberger, Joerg, 4,354,261, Cl. 370-42.000.
Hellwig, Friedrich-Wilhelm; and Seeliger, Christian, 4,354,251, Cl. 364-900.000.
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.
Hess, Ruediger; and Marin, Heiner, 4,354,073, Cl. 200-148.00A.
Koller, Peter; and Mayr, Ulrich, 4,354,055, Cl. 178-42.000.
Krause, Dieter, 4,353,382, Cl. 134-113.000.
Nossek, Josef, 4,354,169, Cl. 333-173.000.
Schiemann, Heinz, 4,354,154, Cl. 324-126.000.
Woborschil, Walter, 4,354,184, Cl. 340-709.000.
Worborschil, Walter, 4,354,185, Cl. 340-709.000.

Silvon, Kay, to Omark Industries, Inc. Saw chain. 4,353,277, Cl. 83-833.000.

Simonds, Edward. Centrifugal separator. 4,353,499, Cl. 233-27.000.

Simons, Gunter, to Henze GmbH. Method for making pipes, plates or containers from plastic material. 4,353,763, Cl. 156-184.000.

Simpson, Frank F., to Black & Decker Inc. Guide tube support for rotary impact hammer. 4,353,425, Cl. 173-109.000.

Simpson Manufacturing Co., Inc.: *See*—
Gilb, Tyrell T., 4,353,664, Cl. 403-232.100.

Singer Company, The: *See*—
Schroeder, George F.; and Demers, Edward A., 4,353,254, Cl. 73-517.00B.

Sircar, Ila; and Bristol, James A., to Warner-Lambert Company. Substituted 4,5-dihydro-6-[4-(1H-imidazol-1-yl)phenyl]-3(2H)-pyridazinones and 6-[4-(1H-imidazol-1-yl)phenyl]-3(2H)-pyridazinones. 4,353,905, Cl. 424-250.000.

Sireix, Georges. Process of forming profiles especially tubular profiles. 4,353,764, Cl. 156-203.000.

Sjoqvist, Carl D. I.; and Soderberg, Tage E., to Saab-Scania Aktiebolag. Arrangement for fitting a pedal arrangement in a vehicle. 4,353,430, Cl. 180-90.000.

Skoultchi, Martin M., to National Starch and Chemical Corporation. Pressure sensitive, hot melt adhesives. 4,354,008, Cl. 525-370.000.

Skryantz, John S.: *See*—
Karayannis, Nicholas M.; and Skryantz, John S., 4,353,813, Cl. 252-429.00B.

Slabach, John C., Jr.; and Kelly, Joseph B., to PPG Industries, Inc. Tong support carriage for use in press bending glass sheets. 4,353,728, Cl. 65-273.000.

Slafer, Warren D.: *See*—
Gerber, Arthur M.; Slafer, Warren D.; and Walworth, Vivian K., 4,353,977, Cl. 430-256.000.

Slagel, Roger D. Sequencing valve. 4,353,386, Cl. 137-119.000.

Sloane, Edwin A., to Fairchild Camera & Instr. Corp. Method and apparatus for calibrating an analog-to-digital converter for a digital-to-analog converter test system. 4,354,177, Cl. 340-347.0CC.

Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, to Ceske vysoke uceni technicke. Device for hemodialysis. 4,353,368, Cl. 128-214.00R.

Sluys, Wesley W., to Builders Concrete, Inc. Utility distribution system for marine floats. 4,353,320, Cl. 114-267.000.

Smith, Bruce M.: *See*—
Colburn, Theodore R.; and Smith, Bruce M., 4,353,375, Cl. 128-782.000.

Smith, Delbert E.: *See*—
Smith, Gary L.; Smith, Delbert E.; Catterson, Floyd D.; and Dooley, Ronald G., 4,353,565, Cl. 280-80.00B.

Smith, Gary L.; Smith, Delbert E.; Catterson, Floyd D.; and Dooley, Ronald G. Attachment for automotive trailers. 4,353,565, Cl. 280-80.00B.

Smith, Gerald T. Template device. 4,353,672, Cl. 409-97.000.

Smith, Michael R.: *See*—
Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, 4,354,102, Cl. 250-201.000.

Smith, Stuart B., to Thermoset AG. Low-density, furfuryl benzylic phenolic thermosetting foam product and method of preparing same. 4,353,994, Cl. 521-110.000.

SmithKline Corporation: *See*—
Hedde, Richard D.; and Parish, Roger C., 4,353,902, Cl. 424-250.000.

Snamprogetti, S.p.A.: *See*—
Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, 4,353,996, Cl. 523-105.000.
Re, Luciano; Brant, Alberto; and Bassignani, Luciano, 4,353,825, Cl. 260-239.100.

Snitzer, Elias; and Bacon, James F., to United Technologies Corporation. Composite bonding. 4,353,966, Cl. 428-428.000.

Sobol, Anthony J., III, to Texas Instruments Incorporated. Long travel elastomer keyboard. 4,354,068, Cl. 200-5.00A.

Societe Anonyme D.B.A.: *See*—
Carre, Jean-Jacques; and Riquart, Christian, 4,353,599, Cl. 303-22.00R.
Hauduc, Jean J., 4,353,291, Cl. 92-99.000.

Societe Anonyme de Recherches de Mecanique Appliquee: *See*—
Robert, Daniel, 4,353,267, Cl. 74-579.00R.

Societe Anonyme de Recherches de Mecanique Appliquee-Sarma: *See*—
Picard, Claude; and Daugny, Daniel, 4,353,268, Cl. 74-587.000.

Societe Anonyme des Etablissements Adrien de Backer: *See*—
Hoffmann, Marcel E., 4,354,221, Cl. 362-300.000.

Societe Anonyme Francaise du Ferodo: *See*—
Bionaz, Jean E., 4,353,444, Cl. 192-3.290.

Societe d'Exploitation Clairitex: *See*—
Comte, Pierre, 4,353,659, Cl. 403-24.000.

Societe Europeenne de Propulsion: *See*—
Habermann, Helmut, 4,353,602, Cl. 308-10.000.

Societe Internationale de Mecanique Industrielle S.A.: *See*—
Menager, Jean, 4,354,097, Cl. 235-96.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See*—
Soligny, Marcel R.; Duponchel, Jean-Pierre D. J.; and Hoch, Rene G., 4,353,516, Cl. 244-110.00B.

Societe Nationale Elf Aquitaine: *See*—
Faure, Alain; Maldonado, Paul; Husson, Jean-Francois; and Coste, Camille, 4,353,729, Cl. 71-11.000.

Societe: Ressorts Industrie: *See*—
Duchemin, Michel, 4,353,503, Cl. 238-349.000.

Sodeno, Keiji: *See*—
Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.

Soderberg, Tage E.: *See*—
Sjoqvist, Carl D. I.; and Soderberg, Tage E., 4,353,430, Cl. 180-90.000.

Sogo, Toshio: *See*—
Yamanaka, Kenichi; Mihashi, Yutaka; and Sogo, Toshio, 4,353,754, Cl. 148-1.500.

Sohl, Gordon; Masters, John R.; and Leicht, John R., to Xerox Corporation. Moving coil, multiple energy print hammer system including a closed loop servo. 4,353,656, Cl. 400-157.300.

Sokolovsky, Alexandr E.: *See*—
Lyakhevich, Genrickh D.; and Sokolovsky, Alexandr E., 4,353,752, Cl. 106-309.000.

Soligny, Marcel R.; Duponchel, Jean-Pierre D. J.; and Hoch, Rene G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Thrust reverser and silencer assembly of turbojet engines. 4,353,516, Cl. 244-110.00B.

Solomon, Harvey D., to General Electric Company. Method of making high strength duplex stainless steels. 4,353,755, Cl. 148-136.000.

Sommargren, Gary E., to United States of America, Energy. Laser heterodyne surface profiler. 4,353,650, Cl. 356-371.000.

Sommer Co.: *See*—
Sommer, Gordon M., 4,353,448, Cl. 192-70.130.

Sommer, Gordon M., to Sommer Co. Clutch unit. 4,353,448, Cl. 192-70.130.

Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Distributor for internal combustion engine. 4,354,070, Cl. 200-19.00R.

Sonstegard, David A.: *See*—
Forte, Mark R.; and Sonstegard, David A., 4,353,135, Cl. 3-1.911.

Sony Corporation: *See*—
Nameki, Yoshinobu; and Miyashita, Shin, 4,354,206, Cl. 358-254.000.

Sopena Quesada, Angel. Intrauterine spermicide. 4,353,363, Cl. 128-130.000.

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Schwob, Hans-Peter; and Soppelsa, Peter, 4,354,272, Cl. 372-36.000.

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Maslanka, William W.; and Spence, Gavin G., 4,353,818, Cl. 524-458.000.

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Crumbliss, Robert T., 4,353,317, Cl. 112-266.200.

Spendlow, Harry C., Sr.; and Houghton, William E., to Agri-Flex, Inc. Fluid control gate. 4,353,524, Cl. 251-145.000.

Spercel, Robert J. Tuning device. 4,353,280, Cl. 84-306.000.

Sperry Corporation: *See*—
Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., 4,353,199, Cl. 56-10.200.
Lonnemo, Kurt R., 4,353,289, Cl. 91-420.000.
Olive, Edmond E., 4,354,240, Cl. 364-434.000.
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Armini, Anthony J.; and Little, Roger G., 4,353,160, Cl. 29-572.000.

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Williams, Milton J., 4,353,318, Cl. 114-211.000.

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Butterfield, Ted; Emory, Lyle J.; and Filicicchia, Daniel, 4,353,508, Cl. 239-590.300.

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Acton, Edward M.; and Tong, George L., 4,353,894, Cl. 424-180.000.

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Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., 4,354,228, Cl. 364-200.000.

Stahlmann, Rudolf: *See*—
Hubsch, Gunter; and Stahlmann, Rudolf, 4,353,304, Cl. 102-470.000.

Stallings, Glenda L. Process and apparatus for matching indicia panels and the like. 4,353,759, Cl. 156-64.000.

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Munnichs, Cornelis M.; and Bookelmann, Theodorus F. I., 4,353,870, Cl. 422-129.000.

Standard Oil Company (Indiana): *See*—
Godfrey, Jack F.; and Grant, Charles L., 4,353,851, Cl. 264-37.000.
Hoekstra, Gerald B.; and Christian, David R., 4,353,418, Cl. 166-259.000.
Karayannis, Nicholas M.; and Skryantz, John S., 4,353,813, Cl. 252-429.00B.
Pellet, Regis J., 4,353,791, Cl. 208-10.000.
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Statt, William L., to Xerox Corporation. Multimagnification mode optical system with rotating and translating lens. 4,353,643, Cl. 355-57.000.

Stehlin, Bernhard: *See*—
Wilken, Joachim H.; Stehlin, Bernhard; Pathe, Volker; Wamser, Manfred; and Pietzsch, Ludwig, 4,353,446, Cl. 192-21.000.

Steidinger, Ronald L., to Forrest Redi-Mix Co. Method and apparatus for constructing a system of gutters for a swine building. 4,353,328, Cl. 119-20.000.

Steiner, Janos: *See*—
Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.

Steingroever, Dietrich: *See*—
Steingroever, Erich A.; and Steingroever, Dietrich, 4,354,218, Cl. 361-147.000.

Steingroever, Erich A.; and Steingroever, Dietrich. Process and apparatus for multi-polar magnetization of annular permanent magnets. 4,354,218, Cl. 361-147.000.

Sterbank, John D.: *See*—
Hillebrand, Arthur N.; and Sterbank, John D., 4,353,155, Cl. 29-149.5DP.

Sterling Drug Inc.: *See*—
Lesher, George Y.; and Dickinson, William B., 4,354,026, Cl. 544-238.000.

Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., to International Standard Electric Corporation. Coating powder with valve-metal. 4,353,938, Cl. 427-214.000.

Stetter, Jorg; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating pests with 2-(azol-1-yl)-aldoxime-carbamates. 4,353,915, Cl. 424-269.000.

Stevens, Albert F.; and Haley, Paul E., to Opex Corporation. Content activated envelope extraction. 4,353,197, Cl. 53-492.000.

Stewart, David G.: *See*—
Ball, William J.; and Stewart, David G., 4,354,049, Cl. 585-415.000.

Stewart, John M., to Sunglo Solar Ltd. Solar energy collectors. 4,353,355, Cl. 126-445.000.

Stewart, Roger G., to RCA Corporation. Random access memory with volatile and non-volatile storage. 4,354,255, Cl. 365-154.000.

Stieritz, William J.: *See*—
Crackel, John E.; and Stieritz, William J., 4,354,277, Cl. 455-259.000.

Stinecipher, Mary M.: *See*—
Akst, Irving B.; and Stinecipher, Mary M., 4,353,758, Cl. 149-109.600.

Stock, Arthur J.; and Christopher, Donald S., to Stock Equipment Company. Weight-sensor calibration for gravimetric coal feeder. 4,353,427, Cl. 177-50.000.

Stock Equipment Company: *See*—
Stock, Arthur J.; and Christopher, Donald S., 4,353,427, Cl. 177-50.000.

Stockbridge, Bruce W.: *See*—
Spaller, Albert E., Jr.; Stockbridge, Bruce W.; and Meredith, Thomas D., Jr., 4,353,492, Cl. 226-11.000.

Stockel, Dieter; and Kocher, Hans H., to G. Rau. Electrical contact element and process for its manufacture. 4,354,075, Cl. 200-262.000.

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Stoll, Kurt. Magnetically coupled arrangement for a driving and a driven member. 4,354,125, Cl. 310-103.000.

Stollenwerk, Ulrich: *See*—
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Strandli, Kaare R.; and Ostlie, Arne M., to A/S Raufoss Ammunisjonsfabrikker. Arrangement in or relating to a projectile. 4,353,302, Cl. 102-364.000.

Straubel, Max; Konrath, Karl; and Brink, Gerhard, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,353,340, Cl. 123-365.000.

Strege, Paul E.; and Renga, James M., to Dow Chemical Company, The. Process for making alkylene carbonates. 4,353,831, Cl. 549-229.000.

Streicher, William L.: *See*—
Hohman, Charles M.; and Streicher, William L., 4,353,725, Cl. 65-27.000.

Striegl, Georg. Device for machine reamer. 4,353,669, Cl. 408-185.000.

Strobel, Manfred: *See*—
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Strom, Johan P.; and Fager, Leif-Olof, to U.S. Philips Corporation. Bearing device. 4,353,603, Cl. 308-26.000.

Strom, Robert M., to Dow Chemical Company, The. Nickel catalysts for oxidative coupling of phenols. 4,354,047, Cl. 568-730.000.

Strom, Robert M., to Dow Chemical Company, The. Copper chromite catalysts for oxidative coupling of phenols. 4,354,048, Cl. 568-730.000.

Stromberg-Carlson Corporation: *See*—
Niertit, Frank; and Conner, Alvin R., 4,354,060, Cl. 179-81.00R.

Strong, Walker A., to PPG Industries, Inc. Alkyl N-3-halo-,N-3,5-dihalobenzoyl-N-isopropylaminoacetate herbicides. 4,354,032, Cl. 560-41.000.

Stroud, Lebern W. Alternator winding. 4,354,127, Cl. 310-198.000.

Sturniolo, Giuseppe. Rolling bearing. 4,353,607, Cl. 308-214.000.

Stynes, James A.: *See*—
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Suchy, Milos: *See*—
Kovar, Josef; and Suchy, Milos, 4,353,428, Cl. 180-7.00R.

Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Fuel injection control system. 4,353,342, Cl. 123-493.000.

Sugihara, Takashi F., to United States of America, Agriculture. Soda crackers. 4,353,926, Cl. 426-20.000.

Sugita, Hiroshi: *See*—
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Sugitani, Hatuo: *See*—
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Sumitomo Bakelite Company, Limited: *See*—
Yamaoka, Sigenori; Kusuhara, Akinobu; and Endo, Toshinaga, 4,353,954, Cl. 428-216.000.

Sumitomo Chemical Company, Ltd.: *See*—
Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,353,916, Cl. 424-270.000.
Sumitomo Metal Industries, Ltd.: *See*—
Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, 4,353,951, Cl. 428-198.000.
Sun Dengyosha Company, Limited: *See*—
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Yoshimura, Sumio, 4,354,079, Cl. 200-314.000.
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Luker, Charles E., 4,353,474, Cl. 215-220.000.
Sunglo Solar Ltd.: *See*—
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Suntech, Inc.: *See*—
Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,353,792, Cl. 208-254.00H.
Superpressure, Inc.: *See*—
Christman, Ross D., 4,353,684, Cl. 417-388.000.
Surek, Thomas: *See*—
Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,353,757, Cl. 148-172.000.
Susnjara, Kenneth J.; and Fleck, Mark A., to Thermwood Corporation. Wrist construction for industrial robots. 4,353,677, Cl. 414-735.000.
Suzuki, Hajime; and Iwano, Yoshimi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for forming a selvedge in a loom. 4,353,396, Cl. 139-54.000.
Suzuki, Hideo: *See*—
Adachi, Takeshi; Suzuki, Hideo; and Kaneko, Makoto, 4,353,278, Cl. 84-1.010.
Suzuki, Katsumi: *See*—
Kaneko, Kazuyoshi; and Suzuki, Katsumi, 4,353,595, Cl. 297-408.000.
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Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, 4,353,299, Cl. 101-144.000.
Suzuki, Teruki: *See*—
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Sweeney, William M.; and Herbstman, Sheldon, to Texaco Inc. Novel method of extending a hydrocarbon fuel heavier than gasoline by adding a methoxy or ethoxy group. 4,353,710, Cl. 44-56.000.
Sweet, Ralph: *See*—
Poggemiller, Erhard; and Sweet, Ralph, 4,353,423, Cl. 172-260.500.
Sweetland, Roger D., to Cummins Engine Company, Inc. Crankcase ventilating system. 4,353,332, Cl. 123-41.860.
Swenson Spreader Company: *See*—
Hoekstra, Ralph W., 4,353,177, Cl. 37-234.000.
Swift, Harold E., to Gulf Research & Development Company. Process for hydrogenating unsaturated carboxylic acids and carboxylic acid esters. 4,353,835, Cl. 260-409.000.
Swift, Joseph A., to Xerox Corporation. Method for making reticulated foam structures. 4,353,853, Cl. 264-41.000.
Switchcraft, Inc.: *See*—
Lutzenberger, Kurt, 4,354,076, Cl. 200-308.000.
SWS Incorporated: *See*—
Nilsen, Carl J., 4,354,090, Cl. 219-121.0LC.
Sybron Corporation: *See*—
Pietschmann, Helmut, 4,354,071, Cl. 200-86.500.
Symersky, Bohuslav, to U.S. Philips Corporation. Method of manufacturing a device having a conductor pattern. 4,353,935, Cl. 427-89.000.
Syntex (U.S.A.) Inc.: *See*—
Clark, Robin D., 4,353,900, Cl. 424-248.540.
Clark, Robin D., 4,353,901, Cl. 424-248.570.
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Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, 4,353,903, Cl. 424-250.000.
Systems, Science and Software: *See*—
Lagus, Peter L.; and Peterson, Edward W., 4,353,249, Cl. 73-155.000.
Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., to Mobay Chemical Corporation. Novel catalyst system for polyurethane foams. 4,353,995, Cl. 521-125.000.
Szala, Lawrence E.: *See*—
Lee, Minyoung; and Szala, Lawrence E., 4,353,714, Cl. 51-295.000.
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Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
Tabata, Junichi; and Kaneko, Noboru, to Kabushiki Kaisha Daini Seikosha. Electrochromic display device. 4,354,187, Cl. 340-763.000.
Tada, Kinya; and Oyamada, Kenji, to Sanyo Electric Co., Ltd. Apparatus for charging rechargeable battery. 4,354,148, Cl. 320-20.000.
Takada, Juichiro. Automobile passive type safety seat belt system. 4,353,579, Cl. 280-804.000.
Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Welding apparatus with forward shiftable electrode tables. 4,354,089, Cl. 219-97.000.
Takahashi, Itaru: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.
Takano, Yoshio: *See*—
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Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, to Fujisawa Pharmaceutical Co., Ltd. Process for preparing 3-methylenecepham compounds or a salt thereof. 4,354,022, Cl. 544-28.000.
Takazawa, Yuzuru; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Exposure information input circuit for electric shutter. 4,353,631, Cl. 354-51.000.
Takeda Riken Kogyo Kabushikikaisha: *See*—
Aihara, Hiroshi, 4,354,176, Cl. 340-347.0NT.
Takeda, Susumu: *See*—
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Takematsu, Yoshiyuki, to Fuji Koeki Corporation. Electric flash device for camera. 4,354,141, Cl. 315-241.00P.
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Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.
Takewa, Hiroyuki: *See*—
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Takeyasu, Isaburo; Nagamachi, Koichi; and Sato, Yuji, to Zeni Lite Buoy Co., Ltd. System of generating synchronizing signals in a navigational light group. 4,354,172, Cl. 340-29.000.
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Takizawa, Hiroshi; Oiji, Yoshimasa; and Hirayama, Tatsuyuki, to Kyowa Hakko Kogyo Co., Ltd. Pharmaceutical composition containing a benzofurancarboxamide derivative as the active ingredient. 4,353,923, Cl. 424-285.000.
Talbot, Kevin J., to Mannesmann Tally Corporation. Rotary/linear shuttle mechanism. 4,353,262, Cl. 74-108.000.
Tam Ceramics Inc.: *See*—
Rutt, Truman C.; and Stynes, James A., 4,353,957, Cl. 428-292.000.
Tanaka, Haruo: *See*—
Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.
Tanaka, Hiroshi. Apparatus for automatically developing film. 4,353,635, Cl. 354-320.000.
Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, to Minolta Camera Kabushiki Kaisha. Copy paper separating method for use in electrophotographic copying apparatus. 4,353,648, Cl. 355-133.000.
Tando, Shuichi, to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha. Magazine for storing and supplying circuit elements. 4,353,481, Cl. 221-251.000.
Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, to Hitachi, Ltd. Phosphors and process for producing the same. 4,353,808, Cl. 252-301.40P.
Tanimoto, Tateo: *See*—
Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
Tarui, Hiroyuki. Shoe scraper mat. 4,353,944, Cl. 428-74.000.
Taylor, David H., to Thermo King Corporation. Transport refrigeration system. 4,353,221, Cl. 62-239.000.
Taylor, Eric, to Paterson Products Limited. Frames. 4,353,644, Cl. 355-72.000.
Taylor, Harold W., Jr. Tobacco harvesting machine. 4,353,200, Cl. 56-27.500.
Taylor, William R.; and Gonia, Richard J., to General Electric Company. Cable retractor. 4,353,518, Cl. 248-60.000.
Teague, W. Dorwin, Jr.; and Sempliner, Arthur T. Power toothbrush. 4,353,141, Cl. 15-22.00R.
Technomatic AG: *See*—
Ruchser, Erich; and Ott, Helmut, 4,353,392, Cl. 137-596.160.
Tegg, Derek: *See*—
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Teijin Limited: *See*—
Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.
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Telefonaktiebolaget L M Ericsson: *See*—
Carlsson, Karl-Johan V.; and Kjoller, Hans O. S., 4,354,231, Cl. 364-200.000.
Nyberg, Karl F. L.; and Josefsson, Kjell S., 4,354,265, Cl. 370-111.000.
Tellert, Rudy; and Fischer, Wolfgang, to Sachs-Systemtechnik GmbH. Cooking vessel for an induction cooking appliance. 4,354,082, Cl. 219-10.49R.

Tenex Corporation: *See—*
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Tenmyo, Shigemoto; and Koide, Hiroshi, to Ricoh Company, Ltd. Drive apparatus. 4,354,146, Cl. 318-341.000.
Tenneco Chemicals, Inc.: *See—*
Hasse, Donald J.; Walker, David G.; and Ostrowski, Paul C., 4,353,840, Cl. 260-448.00R.
Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, to Ishikawa Seisakusho Ltd. Apparatus for inserting a weft on an air jet loom. 4,353,397, Cl. 139-435.000.
Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic materials. 4,353,979, Cl. 430-372.000.
Terakado, Seishi: *See—*
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Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, to Hitachi, Ltd. Field controlled thyristor control circuit with additional FCT in reverse bias circuit. 4,354,121, Cl. 307-252.00C.
Terlizzi, Marie B.: *See—*
Quatrini, Lucretia R.; Terlizzi, Marie B.; and Martin, Brice E., 4,353,878, Cl. 423-53.000.
Terreault, Gerard; and Deflandre, Yves, to 501 Centre de Recherche Industrielle du Quebec. Multi-subscriber differentiation and distribution switching system having interchangeable differentiating circuits. 4,354,167, Cl. 333-103.000.
Tesa S.A.: *See—*
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Tescom Corporation: *See—*
Nelson, Craig E.; and Kawamoto, Frank T., 4,353,395, Cl. 137-861.000.
Tessier, Leo: *See—*
Goupil, Marcel; and Tessier, Leo, 4,353,549, Cl. 273-67.00A.
Teutsch, Jean G.; and Deraedt, Roger, to Roussel Uclaf. Novel 16α-methyl-pregnane. 4,353,899, Cl. 424-243.000.
Texaco Inc.: *See—*
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Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-107.00R.
Richter, Albert P., Jr.; and Campsey, Ronald L., 4,354,110, Cl. 250-358.100.
Sweeney, William M.; and Herbstman, Sheldon, 4,353,710, Cl. 44-56.000.
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Widmyer, Richard H., 4,353,419, Cl. 166-379.000.
Texas Instruments Incorporated: *See—*
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Jones, James J., 4,353,601, Cl. 303-106.000.
Naden, Rex A., 4,354,253, Cl. 365-15.000.
Sobol, Anthony J., III, 4,354,068, Cl. 200-5.00A.
Texasgulf Inc.: *See—*
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Hagner, Willi; Thaer, Andreas; and Bigar, Francis, 4,353,618, Cl. 350-91.000.
Therm-O-Disc, Incorporated: *See—*
Risacher, Gerard H., 4,354,170, Cl. 337-334.000.
Thermo King Corporation: *See—*
Taylor, David H., 4,353,221, Cl. 62-239.000.
Thermoset AG: *See—*
Smith, Stuart B., 4,353,994, Cl. 521-110.000.
Thermwood Corporation: *See—*
Susnjara, Kenneth J.; and Fleck, Mark A., 4,353,677, Cl. 414-735.000.
Thibault, Ronald M., to Osborne Industries, Inc. Rotary self-feeder. 4,353,329, Cl. 119-52.00A.
Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, to BASF Aktiengesellschaft. Phenylpiperazine derivatives of 1,3,4-oxadiazolylphenols, and therapeutic agents containing these compounds. 4,353,904, Cl. 424-250.000.
Thieme, Peter C.: *See—*
Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.
Thiersch, Friedrich; and Strobel, Manfred, to Carl Still GmbH & Co. KG, Firma. Earthquake-proof foundation for coke oven batteries. 4,353,189, Cl. 52-167.000.
Thiokol Corporation: *See—*
Bell, Frank H., 4,353,303, Cl. 102-367.000.
Thomas, Delbert C., Jr.: *See—*
Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
Thomas, Herbert: *See—*
Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,353,913, Cl. 424-263.000.
Thomas, Patrick D. P.: *See—*
Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., 4,353,974, Cl. 430-218.000.
Thompson, Gregory J.: *See—*
Lomas, David A.; and Thompson, Gregory J., 4,353,812, Cl. 252-417.000.
Thompson, Neil E. S., to Petrolite Corporation. N,N'-Disubstituted hexahydropyrimidines. 4,354,025, Cl. 544-231.000.
Thoms, Roland, to Buckbee-Mears Company. Hole technology. 4,353,948, Cl. 428-131.000.
Thomson-CSF: *See—*
Billottet, Henri; Augy, Henri; and Quoy, Andre, 4,353,284, Cl. 89-40.00B.
Delegue, Francois E., 4,354,245, Cl. 364-606.000.
Leclerc, Pierre; Huignard, Jean-Pierre; and Aubourg, Philippe, 4,353,616, Cl. 350-3.750.
Micheron, Francois, 4,354,134, Cl. 310-800.000.
Three Rivers Development Corporation: *See—*
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,353,929, Cl. 426-243.000.
Thurber, T. C.; and Tegg, Derek, to Syntex (U.S.A.) Inc. Process for 5-aroylation of 1,2-dihydro-3H-pyrrolo[1,2-a]pyrrole-1-carboxylic esters. 4,353,829, Cl. 260-326.250.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.
Tiefenthal, Alfred. Ice skate. 4,353,562, Cl. 280-7.130.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.
Tohill, Henry O., to W-K-M Wellhead Systems, Inc. Metal seal assembly with deformable sealing ring. 4,353,560, Cl. 277-236.000.
Tokumitsu, Jun; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Optical system capable of continuously varying the diameter of a beam spot. 4,353,617, Cl. 350-6.800.
Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Tando, Shuichi, 4,353,481, Cl. 221-251.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hiraoka, Shunji; Niwa, Makoto; and Ishii, Satoru, 4,353,680, Cl. 415-219.00R.
Kishii, Toru, 4,353,649, Cl. 356-33.000.
Nishio, Kosaku, 4,354,112, Cl. 378-99.000.
Sato, Fumitaka, 4,354,258, Cl. 365-230.000.
Shima, Takeshi; and Torii, Ken-ichi, 4,354,124, Cl. 307-522.000.
Tolasch, Gerhard; and Grasse, Hans J., to Hauni-Werke Korber & Co. KG. Apparatus for transport and temporary storage of cigarettes or the like between producing and processing machines. 4,353,454, Cl. 198-347.000.
Tomburo, Anthony F.: *See—*
Kachur, Nicholas W.; and Tomburo, Anthony F., 4,353,475, Cl. 215-223.000.
Tomita, Yoshinobu: *See—*
Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, 4,353,727, Cl. 65-36.000.
Tomlinson, Harvard L.; and Crain, Stephen F., to Halliburton Company. Additive metering control system. 4,353,482, Cl. 222-1.000.
Tomsen, Harald: *See—*
Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.
Tong, George L.: *See—*
Acton, Edward M.; and Tong, George L., 4,353,894, Cl. 424-180.000.
Toolema AB: *See—*
Undin, Hans; and Wiener, Hans, 4,353,240, Cl. 72-410.000.
Toreson, James S.: *See—*
Gilovich, Paul A.; and Toreson, James S., 4,354,211, Cl. 360-84.000.
Torii, Ken-ichi: *See—*
Shima, Takeshi; and Torii, Ken-ichi, 4,354,124, Cl. 307-522.000.
Tosco Corporation: *See—*
Firth, Donald, 4,353,558, Cl. 277-30.000.
Toshiba Silicone Co., Ltd.: *See—*
Kimura, Hiroshi, 4,354,013, Cl. 528-16.000.
Totsuka, Kaoru: *See—*
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.
Toyama, Jiro; Takaoka, Hiromi; and Kariya, Kyoji, to Fujitsu Limited. Atomic beam device. 4,354,108, Cl. 250-251.000.
Toyo Engineering Corporation: *See—*
Inoue, Shigeru; Ono, Hiroshi; and Fujii, Hidetsugu, 4,354,040, Cl. 564-67.000.
Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, 4,353,730, Cl. 71-29.000.
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kaji, Kiyokane, 4,354,131, Cl. 310-328.000.
Trabue, Gordon C.: *See—*
Allen, William M.; and Trabue, Gordon C., 4,353,413, Cl. 165-92.000.
Trachte, Dietrich, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,353,343, Cl. 123-502.000.
Trane Company, The: *See—*
Linnert, Peter J.; and Quinn, James R., 4,353,682, Cl. 417-295.000.
Saunders, James F.; and Krocker, Robert E., 4,353,409, Cl. 165-2.000.
Trantow, Mark D., to Wausau Metals Corp. Jointed vertical slat for window blind. 4,353,404, Cl. 160-236.000.

Trummlitz, Gunter: *See—*
Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.
Trutzschler GmbH & Co. KG: *See—*
Beneke, Wolfgang, 4,353,148, Cl. 19-105.000.
TRW Inc.: *See—*
Crackel, John E.; and Stieritz, William J., 4,354,277, Cl. 455-259.000.
Kolakowski, Thomas A.; and Vishnevsky, Constantine, 4,353,405, Cl. 164-122.200.
Schultz, Ronald L., 4,353,620, Cl. 350-96.210.
Tsakonas, Athanassios: *See—*
Polyzoides, Apostolos J.; and Tsakonas, Athanassios, 4,353,136, Cl. 3-1.911.
Tse, Samuel Y., to Procor Limited-Procor Limitee. Pelletizing method and apparatus. 4,353,852, Cl. 264-37.000.
Tsukamoto, Masaaki: *See—*
Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.
Tsukamoto, Shinjiro; and Ugawa, Masahiro. Automatic isolator of blood plasma. 4,354,116, Cl. 250-576.000.
Tsunematsu, Hiroshi: *See—*
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.
Tsunoda, Teruo: *See—*
Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, 4,353,937, Cl. 427-130.000.
Turley, Patricia A.: *See—*
Capuano, Italo A.; Carr, Lawrence P.; and Turley, Patricia A., 4,353,741, Cl. 75-109.000.
Turnbull, Fred G., to General Electric Company. Step-up/step down chopper. 4,354,223, Cl. 363-124.000.
Turner, Gale R.: *See—*
Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., 4,354,074, Cl. 200-153.00J.
Turner, Gary B., to Atlantic Richfield Company. Process for fabricating solar to electrical energy conversion units. 4,353,161, Cl. 29-572.000.
Twohig, Elizabeth A.: *See—*
Gay, Walter A.; and Twohig, Elizabeth A., 4,353,920, Cl. 424-270.000.
U.M.C. Industries, Inc.: *See—*
Shah, Hasmukh R.; and Ross, Michael S., 4,353,452, Cl. 194-100.00A.
Uchidoi, Masanori: *See—*
Saito, Syuichiro; and Uchidoi, Masanori, 4,353,632, Cl. 354-133.000.
Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, to Nissan Motor Co., Ltd. Non-linkage type load sensing valve. 4,353,600, Cl. 303-24.00F.
Ueda, Ikuo: *See—*
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, to Sumitomo Chemical Company, Ltd. Benzothiazol-2-ones and phytopathogenic fungicidal use thereof. 4,353,916, Cl. 424-270.000.
Ueno, Takeshi: *See—*
Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.
Ugawa, Masahiro: *See—*
Tsukamoto, Shinjiro; and Ugawa, Masahiro, 4,354,116, Cl. 250-576.000.
Umemura, Izumi: *See—*
Nohda, Masao; and Umemura, Izumi, 4,353,625, Cl. 351-13.000.
Undin, Hans; and Wiener, Hans, to Toolema AB. Crimping tool. 4,353,240, Cl. 72-410.000.
Union Carbide Corporation: *See—*
Doumaux, Arthur R., Jr.; Downey, James M.; Henry, Joseph P.; and Hurt, John M., 4,353,843, Cl. 260-466.000.
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,354,009, Cl. 526-125.000.
Keogh, Michael J., 4,353,997, Cl. 523-210.000.
Merkert, Rodney F., 4,353,744, Cl. 75-134.00V.
Prakash, Sri, 4,353,153, Cl. 29-25.420.
United Conveyor Corporation: *See—*
Margison, Elwood R., 4,353,674, Cl. 414-323.000.
United Kingdom Atomic Energy Authority: *See—*
Goode, Philip D.; Poole, Michael J.; and Proctor, Gordon W., 4,354,113, Cl. 250-423.00R.
Klaschka, John T.; and Davies, Michael J., 4,353,415, Cl. 165-104.210.
United States of America
Agriculture: *See—*
Frick, John G., Jr.; and Harper, Robert J., Jr., 4,353,707, Cl. 8-187.000.
Sugihara, Takashi F., 4,353,926, Cl. 426-20.000.
Air Force: *See—*
Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, 4,354,102, Cl. 250-201.000.
Army: *See—*
Kohler, Hans W., 4,354,192, Cl. 343-14.000.
McCain, William T., 4,353,572, Cl. 280-492.000.
Vig, John R., 4,354,133, Cl. 310-344.000.
Energy: *See—*
Bartlit, John R.; Denton, William H.; and Sherman, Robert H., 4,353,871, Cl. 422-159.000.
Belmonte, Mark S.; Davis, James H.; and Williams, David A., 4,353,391, Cl. 137-565.000.
Cleary, Edward N. G., 4,353,205, Cl. 60-39.120.
Jeffrey, Frank R.; and Shanks, Howard R., 4,353,788, Cl. 204-192.00S.
Peterson, William R., 4,353,561, Cl. 279-123.000.
Sommargren, Gary E., 4,353,650, Cl. 356-371.000.
Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.
Wolf, Gary A., 4,353,884, Cl. 423-277.000.
Health & Human Services: *See—*
Colburn, Theodore R.; and Smith, Bruce M., 4,353,375, Cl. 128-782.000.
Navy: *See—*
Goodman, Jerome, 4,353,768, Cl. 156-253.000.
U.S. Philips Corporation: *See—*
Davies, Robert; Newton, Barrie H.; and Booth, Peter L., 4,354,165, Cl. 331-96.000.
Feiner, Louis F., 4,354,157, Cl. 324-312.000.
Groothuis, Hermanus H. H., 4,354,186, Cl. 340-728.000.
Haenen, Henricus W. G.; and Huesken, Robertus S. N. M., 4,354,200, Cl. 358-23.000.
Hughes, John B., 4,354,274, Cl. 375-120.000.
Immink, Kornelis A.; Bierhoff, Martinus P. M.; and Heemskerk, Jacobus P. J., 4,354,103, Cl. 250-201.000.
Janssen, Johannes H. H., 4,354,145, Cl. 318-254.000.
Konijnendijk, Willem L.; Peters, Robert C.; and Willemsen, Petrus J. M., 4,354,139, Cl. 313-486.000.
Lersmacher, Bernhard, 4,353,782, Cl. 201-25.000.
Maier, Hermann F. L., 4,353,623, Cl. 350-391.000.
Ruyten, Henricus M.; and Hoefnagels, Johannes F., 4,353,226, Cl. 464-40.000.
Schneider, Henri W., 4,354,188, Cl. 340-814.000.
Seitz, Alfred, 4,354,142, Cl. 315-241.00S.
Strom, Johan P.; and Fager, Leif-Olof, 4,353,603, Cl. 308-26.000.
Symersky, Bohuslav, 4,353,935, Cl. 427-89.000.
Vries, Lodewijk B.; and Diepeveen, Matthijs A., 4,354,269, Cl. 371-43.000.
United States Steel Corporation: *See—*
Ahner, Walter D.; and Malosh, James B., 4,353,688, Cl. 432-217.000.
George, Kenneth E., Jr.; and Alexander, Douglas E., 4,354,085, Cl. 219-59.100.
United Technologies Corporation: *See—*
Doman, Glidden S., 4,353,681, Cl. 416-11.000.
Dulberger, Michael D.; Hibner, David H.; and Moringiello, Donald C., 4,353,604, Cl. 308-184.00A.
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., 4,353,780, Cl. 156-664.000.
Grudkowski, Thomas W., 4,354,166, Cl. 331-107.00A.
MacLennan, Roderick A.; and Mulvey, William J., 4,354,234, Cl. 364-424.000.
Murphy, Richard D.; and Clelford, Douglas H., 4,354,230, Cl. 364-200.000.
Scola, Daniel A., 4,354,012, Cl. 526-259.000.
Snitzer, Elias; and Bacon, James F., 4,353,966, Cl. 428-428.000.
University of Utah Research Foundation: *See—*
Harris, Joel M.; and Knorr, Fritz J., 4,353,242, Cl. 73-23.100.
Uniwave, Inc.: *See—*
Abrams, Abraham; and Baumann, John J., 4,353,435, Cl. 184-6.260.
UOP Inc.: *See—*
Antos, George J., 4,353,815, Cl. 252-466.0PT.
Childs, Michael E., 4,353,711, Cl. 44-63.000.
Cleary, Michael T.; and Kulprathipanja, Santi, 4,353,838, Cl. 260-419.000.
Cleary, Michael T.; and Kulprathipanja, Santi, 4,353,839, Cl. 260-419.000.
Fink, Allen H., 4,353,811, Cl. 252-417.000.
Lomas, David A.; and Thompson, Gregory J., 4,353,812, Cl. 252-417.000.
Lowe, Frederick G., 4,353,594, Cl. 297-307.000.
Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, 4,353,794, Cl. 208-321.000.
Upjohn Company, The: *See—*
Lincoln, Frank H., 4,354,021, Cl. 542-431.000.
Wolf, Holly J., 4,353,987, Cl. 435-147.000.
Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, to Hitachi, Ltd. Method for fabricating fluorescent lamp. 4,353,727, Cl. 65-36.000.
Ustav pro vyzkum motorvych vozidel: *See—*
Kovar, Josef; and Suchy, Milos, 4,353,428, Cl. 180-7.00R.
USV Pharmaceutical Corporation: *See—*
Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, 4,354,027, Cl. 544-346.000.
Uyeda, Tim M., to La Gard, Inc. Friction drive-snap inner fit tumbler wheel construction. 4,353,231, Cl. 70-316.000.
Valentin, Guenter: *See—*
Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, 4,354,020, Cl. 528-323.000.
Valeo: *See—*
Bacher, Michel, 4,353,451, Cl. 192-89.00B.

Vallourec, Societe Anonyme: *See—*
Breton, Jean-Jacques; and Malicet, Philippe, 4,353,238, Cl. 72-209.000.

Vandenbossche, Benjamin E., to Sealed Air Corporation. Solar collector units with mounting frame. 4,353,356, Cl. 126-450.000.

van der Scheer, Derk, to Hazemeijer B.V. Selective safety device for the protection of a power distribution system. 4,354,215, Cl. 361-63.000.

Vander Voort, George F., to Bethlehem Steel Corporation. Steel composition for chipper knife. 4,353,743, Cl. 75-124.000.

Vander Voort, George F., to Bethlehem Steel Corporation. Method of heat treating a steel composition for chipper knife. 4,353,756, Cl. 148-143.000.

Van Dorsselaer, Viviane: *See—*
Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,353,828, Cl. 260-326.0NS.

Van Meteren, Johannes, to Lummus Company, The. Apparatus and process for manufacturing finned tubes. 4,353,162, Cl. 29-727.000.

Van Ness, John F.; and Donaldson, G. Edward, to Ferro Corporation. Glass composition and method of manufacture and article produced therefrom. 4,353,991, Cl. 501-20.000.

Varkonyi nee Slovicsko, Janosne: *See—*
Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.

Varshney, Ramesh C.; and Venkateswaran, Kalyanasundaram, to Fairchild Camera and Instrument Corporation. Sense amplifier for CCD memory. 4,354,257, Cl. 365-219.000.

Vartanian, Abkar: *See—*
Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, 4,353,903, Cl. 424-250.000.

Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Stain-resistant cookware multi-layer coating system comprising pigments and a translucent outer layer. 4,353,950, Cl. 428-195.000.

VDO Adolf Schindling A.G.: *See—*
Collonia, Harald, 4,353,339, Cl. 123-350.000.

Veb Rationalisiering Halle: *See—*
Seliger, Ewald; Dudar, Klaus; Stohr, Gunter; Millner, Rudolf; and Banse, Wilhelm, 4,353,928, Cl. 426-238.000.

Vecchiato, Antonio, to Settef S.p.A. Resilient plastic wall coating for the building industry. 4,354,000, Cl. 524-388.000.

Veeco Instruments Incorporated: *See—*
Williams, Norman; and Koch, George R., 4,354,111, Cl. 250-396.00R.

Venkateswaran, Kalyanasundaram: *See—*
Varshney, Ramesh C.; and Venkateswaran, Kalyanasundaram, 4,354,257, Cl. 365-219.000.

Verbandt, Andre. Device for purifying liquids, particularly water. 4,353,797, Cl. 210-159.000.

Verbatim Corporation: *See—*
Martinelli, Lawrence G., 4,354,213, Cl. 360-133.000.

Veres, Gergely: *See—*
Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.

Veretennikova, Nadezhda I.: *See—*
Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A., 4,353,823, Cl. 260-112.50R.

Vershinin, Vasily M.: *See—*
Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V., 4,354,114, Cl. 250-458.100.

Vestra-Union, S.A.: *See—*
Zaehringer, Andre, 4,353,774, Cl. 156-443.000.

Victor Company of Japan, Ltd.: *See—*
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.

Viesturs, Elmars H.; and Bauscher, Billy J., to Lockformer Company, The. Apparatus for making corrugated tubing and method for joining corrugated tubing. 4,353,232, Cl. 72-50.000.

Vig, John R., to United States of America, Army. Hermetically sealed container. 4,354,133, Cl. 310-344.000.

Vishnevsky, Constantine: *See—*
Kolakowski, Thomas A.; and Vishnevsky, Constantine, 4,353,405, Cl. 164-122.200.

Voellmy, Carlo: *See—*
Hess, Hans; and Voellmy, Carlo, 4,353,887, Cl. 424-15.000.

Vogt, Martin C.: *See—*
Quatrini, Lucretia R.; Vogt, Martin C.; and Martin, Brice E., 4,353,881, Cl. 423-58.000.

Voigtlander, Wolfgang: *See—*
Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, 4,353,895, Cl. 424-182.000.

Volakakis, John A. Educational learning aid. 4,353,700, Cl. 434-168.000.

Volk, Benjamin: *See—*
Volk, Joseph, Sr., 4,353,931, Cl. 426-483.000.

Volk, Joseph, Sr., to Volk, Benjamin. Method of hulling pistachio nuts. 4,353,931, Cl. 426-483.000.

Volker, Herbert; and Oser, Polat, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Exhaust gas purification apparatus for an internal combustion engine of motor vehicles. 4,353,208, Cl. 60-299.000.

Vollman, Charles K.: *See—*
Scarberry, Walter P.; and Vollman, Charles K., 4,353,498, Cl. 229-69.000.

Volta, Ideo, to La Puntimatic S.n.C. di Musiani Franco & C. Detector device for overcurrents and the loss of one or two phases. 4,354,216, Cl. 361-92.000.

Vrba, Jiri; Fife. Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Nondestructive system for testing the thickness of boiler tubes in boilers. 4,353,257, Cl. 73-623.000.

Vries, Lodewijk B.; and Diepeveen, Matthijs A., to U.S. Philips Corporation. Apparatus for the processing of an information stream with the aid of an error-correcting convolutional code and apparatus for the detection of an error still irremediable in this processing. 4,354,269, Cl. 371-43.000.

W-K-M Wellhead Systems, Inc.: *See—*
Tohill, Henry O., 4,353,560, Cl. 277-236.000.

W. R. Grace & Co.: *See—*
Green, Peter C.; and Block, Jacob, 4,353,804, Cl. 252-8.50A.

Wada, Thuneo: *See—*
Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.

Wagner, Burkhard E.: *See—*
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,354,009, Cl. 526-125.000.

Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Apparatus for working pipes. 4,353,154, Cl. 29-27.00A.

Wainwright, Richard M.; and Wilson, Steven. Protective cover for individual water fixtures. 4,353,139, Cl. 4-661.000.

Wakefield, Jack C. Two stage disengagement spring for electromagnetic tooth clutches. 4,353,450, Cl. 192-84.00C.

Wakeman, Russell J., to Colt Industries Operating Corp. Engine idle air valve means and system. 4,353,338, Cl. 123-339.000.

Walker, David G.: *See—*
Haase, Donald J.; Walker, David G.; and Ostrowski, Paul C., 4,353,840, Cl. 260-448.00R.

Walter, Arthur, to Erwin Sick GmbH Optik-Elektronik. Light barrier apparatus. 4,354,106, Cl. 250-239.000.

Walter Sarstedt Kunststoff-Spritzgusswerk: *See—*
Farber, Horst; Fritze, Heinz; and Seibel, Eberhard, 4,353,246, Cl. 73-61.400.

Walton, John F. Motor protection circuit. 4,354,214, Cl. 361-23.000.

Walworth, Vivian K.: *See—*
Gerber, Arthur M.; Slafer, Warren D.; and Walworth, Vivian K., 4,353,977, Cl. 430-256.000.

Wamser, Manfred: *See—*
Wilken, Joachim H.; Stehlin, Bernhard; Pathe, Volker; Wamser, Manfred; and Pietzsch, Ludwig, 4,353,446, Cl. 192-21.000.

Warabisako, Terunori; and Shiono, Shigeo, to Hitachi, Ltd. Photocoupling device. 4,354,115, Cl. 250-551.000.

Ward, Richard, to Dobson Park Industries Limited. Percussive tools. 4,353,426, Cl. 173-119.000.

Warkentin, Paul A.: *See—*
Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.

Warner-Lambert Company: *See—*
Sircar, Ila; and Bristol, James A., 4,353,905, Cl. 424-250.000.

Warner, Robert J.: *See—*
Elias, Hans-G.; and Warner, Robert J., 4,354,018, Cl. 528-206.000.

Warnock, John D.: *See—*
Anderson, Lester M.; and Warnock, John D., 4,353,215, Cl. 60-660.000.

Warolin, Christian: *See—*
Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, 4,353,903, Cl. 424-250.000.

Warwick Chemical Limited: *See—*
Hannam, Stephen J.; Saynor, John S.; and Watling, Anthony D., 4,354,042, Cl. 564-144.000.

Wasa, Kiyotaka: *See—*
Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, 4,354,130, Cl. 310-313.00A.

Washington Logging Equipment, Inc.: *See—*
Langford, Frederic E., 4,353,527, Cl. 254-304.000.

Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, to Kowa Company, Ltd. Ka-6606 Aminoglycosides antibiotics and compositions thereof. 4,353,893, Cl. 424-180.000.

Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, to Brother Industries, Ltd. Electronic typewriter and its control apparatus. 4,353,655, Cl. 400-144.200.

Water Services of America, Inc.: *See—*
Leitner, Gordon F., 4,353,414, Cl. 165-95.000.

Watling, Anthony D.: *See—*
Hannam, Stephen J.; Saynor, John S.; and Watling, Anthony D., 4,354,042, Cl. 564-144.000.

Watson, Charles L.: *See—*
Partin, Norman D.; and Watson, Charles L., 4,353,453, Cl. 194-100.00A.

Wausau Metals Corp.: *See—*
Trantow, Mark D., 4,353,404, Cl. 160-236.000.

Weaver, David A.; and Bledsoe, Gordon G. Spool mounting assembly and brake. 4,353,515, Cl. 242-86.700.

Webb, Audivee. Anti-theft device. 4,353,521, Cl. 248-552.000.

Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., to Ciba-Geigy AG. Process for the production of photographic images and photographic materials used in this process. 4,353,974, Cl. 430-218.000.

Weber, Charles J.: *See—*
Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.

Weber, Robert: *See—*
Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.

Weeks, Michael W.; and Brandram, Thomas C., to Interlube Systems Ltd. Lubrication monitoring systems. 4,354,183, Cl. 340-682.000.

Weglin, Walter; and Daly, James M., to Rockcor, Inc. Low inflation warning device for pneumatic tires. 4,353,322, Cl. 116-34.00B.

Wehrenberg, Charles C.: *See—*
Lowe, George F.; Gutkin, Peter A.; and Wehrenberg, Charles C., 4,354,205, Cl. 358-250.000.

Wei-Chuan, Chang, to Yin-Lung, Yang, a part interest. Controllable motorcycle windshield. 4,353,590, Cl. 296-78.100.

Weidmann, Ulrich. Electrical drive apparatus for a vertically displaceable blackboard. 4,353,526, Cl. 254-292.000.

Weigert, Hans. Microfilm retrieval system. 4,353,642, Cl. 355-45.000.

Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Sterilizing apparatus for an encapsulating machine. 4,353,398, Cl. 141-91.000.

Weiler, Rolf, to ITT Industries, Inc. Brake booster. 4,353,287, Cl. 91-369.00A.

Weinkauff, David J.: *See—*
Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,353,924, Cl. 424-317.000.

Weiss, Leonard: *See—*
Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, 4,354,229, Cl. 364-200.000.

Weiss, Wolfgang: *See—*
Keller, Wolfgang; and Weiss, Wolfgang, 4,353,874, Cl. 422-193.000.

Weldy, Ross A. Steering and suspension system for the front wheel of a three-wheeled vehicle. 4,353,567, Cl. 280-92.000.

Welimann, Klaus: *See—*
Rebbe, Klaus; and Welimann, Klaus, 4,353,374, Cl. 128-686.000.

Wendel, Wolfgang: *See—*
Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.

Wendle, Jesse G., Jr., to Hercofina. Minimizing iron in recovered oxidation catalyst material in DMT process. 4,353,810, Cl. 252-412.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Jordan, Armin, 4,353,170, Cl. 33-174.0TA.
Kotthaus, Erich, 4,353,671, Cl. 409-26.000.

Wermelt, Klaus L. P.: *See—*
Hutchinson, William; and Wermelt, Klaus L. P., 4,353,229, Cl. 66-197.000.

Werner, William L., to Granger Associates. Collapsible antenna support apparatus as well as a kit for and method of assembling the apparatus. 4,354,193, Cl. 343-882.000.

Westen, Hannes: *See—*
Muck, Karl-Friedrich; Post, Lothar; and Westen, Hannes, 4,353,856, Cl. 264-240.000.

Western Electric Co., Inc.: *See—*
Etchison, John O., Jr.; and Jones, Robert H. W., Jr., 4,353,469, Cl. 211-41.000.
Etchison, John O., Jr.; and Jones, Robert H. W., Jr., 4,353,614, Cl. 339-125.00R.

Western Litho Plate & Supply Company: *See—*
Harrell, Robert E.; Harrell, Tedd L.; and Coons, Harold E., Jr., 4,353,647, Cl. 355-85.000.

Westinghouse Electric Corp.: *See—*
Hunter, David O., 4,353,258, Cl. 73-644.000.
Lee, Richard M., 4,353,206, Cl. 60-39.18B.
Lee, Richard M., 4,353,207, Cl. 60-39.18B.
Martin, Jack; and Pitkjaan, Elam, 4,354,137, Cl. 313-222.000.
Przybysz, John X., 4,353,779, Cl. 156-659.100.
Yates, William W., 4,354,126, Cl. 310-156.000.

Wetter, Jacob, to MDS Mannesmann Demag Sack GmbH. Hydraulic control system with a pipeline antiburst safety device for a double acting drive cylinder. 4,353,286, Cl. 91-5.000.

Weyerhaeuser Company: *See—*
Abo El-Nil, Mostafa M., 4,353,184, Cl. 47-58.000.

Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., to United States of America, Energy. Heat pump/refrigerator using liquid working fluid. 4,353,218, Cl. 62-6.000.

Wheeler, Richard W., to Eastman Kodak Company. Use of oxalic acid or an acid salt thereof in color transfer assemblages. 4,353,973, Cl. 430-216.000.

White, James S.: *See—*
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,353,929, Cl. 426-243.000.

White, Paul W.: *See—*
Hosler, John F.; and White, Paul W., 4,353,686, Cl. 425-83.100.

White, Richard E.: *See—*
Conger, David R. L.; Gerson, Ira A.; and White, Richard E., 4,354,248, Cl. 364-724.000.

White, William J.: *See—*
Gelpey, Jeffrey C.; Marshall, Donald E., Jr.; and White, William J., 4,354,109, Cl. 250-349.000.

Wibberley, Louis J.: *See—*
Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., 4,353,882, Cl. 423-111.000.

Wicks, Richard W.: *See—*
Gomez, Magdalena U.; and Wicks, Richard W., 4,353,982, Cl. 435-7.000.

Widmyer, Richard H., to Texaco Inc. Method for producing a well in an unconsolidated formation. 4,353,417, Cl. 166-250.000.

Widmyer, Richard H., to Texaco Inc. Method for manufacturing a well production and sand screen assembly. 4,353,419, Cl. 166-379.000.

Wiechert, Rudolf: *See—*
Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,353,985, Cl. 435-59.000.

Wiener, Hans: *See—*
Undin, Hans; and Wiener, Hans, 4,353,240, Cl. 72-410.000.

Wiggins, Richard H.: *See—*
Brantingham, George L.; and Wiggins, Richard H., 4,354,056, Cl. 179-1.0SM.

Wildbolz, Rudolf: *See—*
Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, 4,353,667, Cl. 406-29.000.

Wildt Mellor Bromley Limited: *See—*
Hutchinson, William; and Wermelt, Klaus L. P., 4,353,229, Cl. 66-197.000.

Wiley, W. Don. Pole supported bicycle-type exerciser. 4,353,544, Cl. 272-73.000.

Wilken, Joachim H.; Stehlin, Bernhard; Pathe, Volker; Wamser, Manfred; and Pietzsch, Ludwig, to Pietzsch, Ludwig. Device for positioning and attitude-stabilizing a slewable inert/mass/supporter on one base. 4,353,446, Cl. 192-21.000.

Wilkinson, Richard L., to Discovision Associates. Method of manufacturing an optical reading disc. 4,353,767, Cl. 156-245.000.

Willamette Industries, Inc.: *See—*
Jes, Otto J., 4,353,495, Cl. 229-16.00R.

Willemsen, Petrus J. M.: *See—*
Konijnendijk, Willem L.; Peters, Robert C.; and Willemsen, Petrus J. M., 4,354,139, Cl. 313-486.000.

William H. Rorer, Inc.: *See—*
Diamond, Julius; and Douglas, George H., 4,353,842, Cl. 260-465.00D.

Williams, Bruce E.: *See—*
Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, 4,354,027, Cl. 544-346.000.

Williams, Colin B.: *See—*
Lukens, Herbert R., Jr.; and Williams, Colin B., 4,353,886, Cl. 424-1.000.

Williams, David A.: *See—*
Belmonte, Mark S.; Davis, James H.; and Williams, David A., 4,353,391, Cl. 137-565.000.

Williams Gun Sight Co.: *See—*
Williams, Paul D., 4,353,133, Cl. 2-2.000.

Williams, Milton J., to Spray Guard Corporation. Spray guard. 4,353,318, Cl. 114-211.000.

Williams, Norman; and Koch, George R., to Veeco Instruments Incorporated. Screen lens array system. 4,354,111, Cl. 250-396.00R.

Williams, Paul D., to Williams Gun Sight Co. Shoulder protection device. 4,353,133, Cl. 2-2.000.

Williamson, Calvin C., to Kaiser Steel Corporation. Edge preforming of metal plate. 4,353,235, Cl. 72-130.000.

Wilson, Hugh R. Fit adjustable telescope mount for firearms. 4,353,180, Cl. 42-1.0ST.

Wilson, Joe C.: *See—*
Davis, Pauls; and Wilson, Joe C., 4,354,002, Cl. 524-588.000.

Wilson, Steven: *See—*
Wainwright, Richard M.; and Wilson, Steven, 4,353,139, Cl. 4-661.000.

Windsor Machine Company Limited: *See—*
Scott-Jackson, Dennis G.; and Lim, Hui C., 4,353,705, Cl. 474-158.000.

Wingender, Kaspar: *See—*
Helling, Gunter; Wingender, Kaspar; Himmelmann, Wolfgang; and Beck, Manfred, 4,353,972, Cl. 430-213.000.

Winkler, Heinrich: *See—*
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.

Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, to UOP Inc. Process for the solvent extraction of aromatics and the recovery of an aromatics-free non-aromatic product from a hydrocarbon feedstock. 4,353,794, Cl. 208-321.000.

Winters, Stephen G. Fluid cleaner apparatus. 4,353,381, Cl. 134-111.000.

Wissmann, Michael: *See—*
Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, 4,353,385, Cl. 137-115.000.

Witte, Alexander: *See—*
Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, 4,353,272, Cl. 74-859.000.

Woborschil, Walter, to Siemens Aktiengesellschaft. Display system for localizing regions in a mixed text & picture display. 4,354,184, Cl. 340-709.000.

Woerz, Stephen E.; and Canup, Travis K., to Boise Cascade Corporation. Method for spin bonding ends for composite containers. 4,353,761, Cl. 156-69.000.

Wohl, Ronald A.: *See—*
Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,353,921, Cl. 424-273.00R.

Wolf, Elmar; and Gras, Rainer, to Chemische Werke Huls Aktiengesellschaft. Powdered coating compositions having good storage stability and production of same. 4,354,014, Cl. 528-45.000.

Wolf, Gary A., to United States of America, Energy. Method for synthesizing boracities. 4,353,884, Cl. 423-277.000.

Wolf, Holly J., to Upjohn Company, The. Process for preparing glyceraldehyde from glycerol with methanol dehydrogenase. 4,353,987, Cl. 435-147.000.

Wolff, Edward A.: *See*—
Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.

Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, to Bayer Aktiengeselischaft. Benzimidazolylcarbamic acid ester compounds, their production, and their medicinal use. 4,353,913, Cl. 424-263.000.

Wong, Louis F., to Procter & Gamble Company, The. Activation of hypochlorite bleaching of dyes. 4,353,866, Cl. 422-37.000.

Wood, Milton D., to Fracture Technology, Inc. Method of determining the azimuth and length of a deep vertical fracture in the earth. 4,353,244, Cl. 73-37.000.

Woodall, Jerry M.: *See*—
Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.

Woodford, Frank W. Rug cleaning apparatus. 4,353,145, Cl. 15-321.000.

Woodrich, Kenneth H.: *See*—
Ray, Donald J.; and Woodrich, Kenneth H., 4,353,857, Cl. 264-258.000.

Woods, Thomas J. Ear acoustical attenuating device. 4,353,364, Cl. 128-152.000.

Worborschil, Walter, to Siemens Aktiengeselischaft. Display system for localizing regions in a mixed text and picture display. 4,354,185, Cl. 340-709.000.

Wortmann, Ernst: *See*—
Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.

Wright, John W., to National Semiconductor Corporation. Wide dynamic range control amplifier with offset correction. 4,354,162, Cl. 330-260.000.

WRR Industries, Inc.: *See*—
Osborn, Norbert L.; and Rae, John R., 4,353,685, Cl. 417-406.000.

Wuerzer, Bruno: *See*—
Acker, Rolf-Dieter; Hamprecht, Gerhard; Parg, Adolf; and Wuerzer, Bruno, 4,353,732, Cl. 71-91.000.
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,354,031, Cl. 548-362.000.

Wuest, Anton: *See*—
Demuth, Robert; and Wuest, Anton, 4,353,149, Cl. 19-107.000.

Wurst, Walter K., to International Standard Electric Corporation. Digital ring control system for digital multiplexer. 4,354,264, Cl. 370-110.000.

Wyller, Arne A. Print maker. 4,353,640, Cl. 355-21.000.

Xerox Corporation: *See*—
Beery, Jack, 4,353,540, Cl. 271-10.000.
Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, 4,353,542, Cl. 271-294.000.
Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., 4,353,615, Cl. 350-3.710.
Parker, Delmer G., 4,353,637, Cl. 355-3.0DD.
Parzygnat, William J., 4,353,541, Cl. 271-275.000.
Sohl, Gordon; Masters, John R.; and Leicht, John R., 4,353,656, Cl. 400-157.300.
Statt, William L., 4,353,643, Cl. 355-57.000.
Swift, Joseph A., 4,353,853, Cl. 264-41.000.

Yamada, Kyota; and Komatsu, Akira, to Bodysonic Kabushiki Kaisha. Audio-band electromechanical vibration converter. 4,354,067, Cl. 179-146.00H.

Yamada, Shigeki; and Yamamoto, Takao, to Kabushiki Kaisha Kyoto Daiichi Kagaku. Composition and test piece for measuring glucose concentration in body fluids. 4,353,984, Cl. 435-14.000.

Yamaguchi, Takashi: *See*—
Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Iio, Toshimitsu, 4,353,333, Cl. 123-73.00R.

Yamamoto, Hiroshi: *See*—
Hasegawa, Mitsuhiro; Takewa, Hiroyuki; and Yamamoto, Hiroshi, 4,353,432, Cl. 181-166.000.

Yamamoto, Kiyoshi: *See*—
Hirose, Isao; Yamamoto, Kiyoshi; and Okitsu, Hiroyuki, 4,354,037, Cl. 562-416.000.

Yamamoto, Makoto: *See*—
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.

Yamamoto, Taizo, to Nippon Elanco Kabushiki Kaisha. Capsule orientation control method and apparatus. 4,353,456, Cl. 198-397.000.

Yamamoto, Takao: *See*—
Yamada, Shigeki; and Yamamoto, Takao, 4,353,984, Cl. 435-14.000.

Yamanaka, Kenichi; Mihashi, Yutaka; and Sogo, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Thermo-sensitive switching element manufacturing method. 4,353,754, Cl. 148-1.500.

Yamaoka, Sigenori; Kusuhara, Akinobu; and Endo, Toshinaga, to Sumitomo Bakelite Company, Limited. Flexible printed circuit base board and method for producing the same. 4,353,954, Cl. 428-216.000.

Yamashita, Masanobu: *See*—
Sato, Masato; and Yamashita, Masanobu, 4,353,847, Cl. 261-36.00A.

Yamashita, Norihisa: *See*—
Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,353,916, Cl. 424-270.000.

Yamazaki, Osamu: *See*—
Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, 4,354,130, Cl. 310-313.00A.

Yamazaki, Seiichi: *See*—
Kogane, Mikio; and Yamazaki, Seiichi, 4,353,645, Cl. 355-75.000.

Yamazaki, Takahiko: *See*—
Kanai, Hideo; Shinagawa, Akihiro; Yamazaki, Takahiko; and Itai, Reiichi, 4,353,790, Cl. 204-290.00F.

Yancey, Paul J., to Allied Corporation. Apparatus for growing crystalline materials. 4,353,875, Cl. 422-249.000.

Yano, Kenji: *See*—
Hasegawa, Osamu; Yano, Kenji; and Kaneda, Koichi, 4,354,199, Cl. 357-19.000.

Yao, Shi-Kay, to Rockwell International Corporation. Optical cosine transform system. 4,354,247, Cl. 364-713.000.

Yashin, Valery A.: *See*—
Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V., 4,354,114, Cl. 250-458.100.

Yates, William W., to Westinghouse Electric Corp. Dynamoelectric machine with a permanent magnet rotor having laminated poles. 4,354,126, Cl. 310-156.000.

Yin-Lung, Yang: *See*—
Wei-Chuan, Chang, 4,353,590, Cl. 296-78.100.

Yonekubo, Ken, to Olympus Optical Co., Ltd. Afocal relay lens system. 4,353,624, Cl. 350-453.000.

Yoshida, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Elevator position detector device. 4,354,171, Cl. 340-21.000.

Yoshida, Tsuyoshi: *See*—
Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, 4,354,236, Cl. 364-424.100.

Yoshimura, Motokazu: *See*—
Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.

Yoshimura, Sumio, to Sun Dengyosha Company, Limited. Illuminating type push button switch. 4,354,078, Cl. 200-314.000.

Yoshimura, Sumio, to Sun Dengyosha Company, Limited. Illuminating type push button switch. 4,354,079, Cl. 200-314.000.

Yoshioka, Akiteru: *See*—
Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.

Young, Henry T. Apparatus for gravity blending or particulate solids. 4,353,652, Cl. 366-193.000.

Youngstown Steel Door Company, The: *See*—
Jenkins, Oliver J., Jr.; and Mayfield, Charles W., 4,353,187, Cl. 49-501.000.

Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. System and method for calculating a light information value. 4,353,629, Cl. 354-23.00D.

Yuhas, Gerald J., to NRM Corporation. Ply down assembly for tire building machine. 4,353,771, Cl. 156-403.000.

Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, to Daicel Chemical Industries, Ltd.; and Sumitomo Metal Industries, Ltd. Spot-weldable bonded clad metal plate. 4,353,951, Cl. 428-198.000.

Zachringer, Andre, to Vestra-Union, S.A. Apparatus for forming tucks in a piece of material and for securing those tucks by a heat-sealed reinforcement. 4,353,774, Cl. 156-443.000.

Zago, Jean-Claude. Electrically heated hair curling instrument and temperature control stand therefore. 4,354,093, Cl. 219-225.000.

Zahka, Joseph: *See*—
Mir, Leon; and Zahka, Joseph, 4,353,715, Cl. 55-22.000.

Zahnradfabrik Friedrichshafen, AG: *See*—
Holub, Heinrich, 4,353,288, Cl. 91-375.00A.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,354,140, Cl. 313-499.000.

Zellweger Uster A.G.: *See*—
Harzenmoser, Isidor, 4,353,467, Cl. 209-559.000.

Zeni Lite Buoy Co., Ltd.: *See*—
Takeyasu, Isaburo; Nagamachi, Koichi; and Sato, Yuji, 4,354,172, Cl. 340-29.000.

Zeug, Michael: *See*—
Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, 4,353,718, Cl. 55-112.000.

Zhukovsky, Alexei A.; Butkin, Vladimir D.; and Kulachek, Mikhail I. Rotary drill automatic control system. 4,354,233, Cl. 364-420.000.

Zimmerman, Lee T., to International Business Machines Corporation. Font selection and compression for printer subsystem. 4,353,653, Cl. 400-70.000.

Zimmerman, Lee T.: *See*—
Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.

Zimmermann, Rainer: *See*—
Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.

Zinn, Michael F., to Bio-Energy Systems, Inc. Solar thermosyphon water heater. 4,353,352, Cl. 126-426.000.

Zinser Textilmaschinen GmbH: *See*—
Mollstatter, Walter, 4,353,721, Cl. 55-283.000.

Zip Heaters (Aust.) Pty. Limited: *See*—
Massey, Raymond D.; and Newsam, Leonard, 4,354,094, Cl. 219-306.000.

501 Centre de Recherche Industrielle du Quebec: *See*—
Terreault, Gerard; and Deflandre, Yves, 4,354,167, Cl. 333-103.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adams, Thomas M., to Kaepa, Inc. Lacing assembly for a shoe. Re. 31,052, Cl. 36-50.000.

Allied Chemical Corporation: *See*—
Morris, Robert C.; and Cline, Carl F., Re. 31,057, Cl. 372-41.000.

Bell Telephone Laboratories, Incorporated: *See*—
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.

Burroughs Corporation: *See*—
Harvey, Edgar L., Re. 31,054, Cl. 313-188.000.

Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, to Fairchild Camera & Instrument Corp. Computer controlled high-speed circuit for testing electronic devices. Re. 31,056, Cl. 324-73.00R.

Cline, Carl F.: *See*—
Morris, Robert C.; and Cline, Carl F., Re. 31,057, Cl. 372-41.000.

Corning Glass Works: *See*—
Hausheer, Lawrence B., Re. 31,055, Cl. 313-404.000.

Fairchild Camera & Instrument Corp.: *See*—
Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, Re. 31,056, Cl. 324-73.00R.

Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., to Bell Telephone Laboratories, Incorporated. Apparatus and method for holding and planarizing thin workpieces. Re. 31,053, Cl. 355-77.000.

Harvey, Edgar L., to Burroughs Corporation. Display panel having rows and columns of coplanar scan and display cathodes and large-area anode. Re. 31,054, Cl. 313-188.000.

Hausheer, Lawrence B., to Corning Glass Works. Aperture mask supported by spring lugs and spring clips. Re. 31,055, Cl. 313-404.000.

Herriott, Donald R.: *See*—
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.

Kaepa, Inc.: *See*—
Adams, Thomas M., Re. 31,052, Cl. 36-50.000.

Morris, Robert C.; and Cline, Carl F., to Allied Chemical Corporation. Chromium-doped beryllium aluminate lasers. Re. 31,057, Cl. 372-41.000.

Niu, George: *See*—
Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, Re. 31,056, Cl. 324-73.00R.

Poulsen, Martin E.: *See*—
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.

Rongved, Leif: *See*—
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.

Saunders, Thomas E.: *See*—
Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.

Staffelbach, Rudolph: *See*—
Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, Re. 31,056, Cl. 324-73.00R.

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Sarpaneva, Timo, 266,535, Cl. D26-10.000.

Abbott Laboratories: *See*—
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Abe, Tadao, to Kabushiki Kaisha Daini Seikosha. Wrist watch. 266,491, 10-12-82, Cl. D10-39.000.

Albert, Stephen B.: *See*—
Furbershaw, Gerard A.; Albert, Stephen B.; and Gruye, Dale W., 266,512, Cl. D14-101.000.

American Commercial Incorporated: *See*—
Everhan, Walter, 266,472, Cl. D7-1.000.
Everhan, Walter, 266,474, Cl. D7-59.000.
Everhan, Walter, 266,475, Cl. D7-59.000.

American Hospital Supply Corporation: *See*—
Gammons, Clifford E.; Pagel, Kenneth L.; and Jackson, Barry N., 266,470, Cl. D6-204.000.

Aoki, Eiji, to Tomy Kogyo Co., Inc. Toy racing game track. 266,529, 10-12-82, Cl. D21-143.000.

Appor Limited: *See*—
Rice, Francis J., 266,460, Cl. D6-95.000.

Arnoldware-Rogers (Canada) Ltee: *See*—
Guerette, Richard, 266,485, Cl. D9-349.000.

Associated Mills, Inc.: *See*—
Grube, Clifford E., 266,532, Cl. D24-41.000.

Astatic Corporation, The: *See*—
Minamizono, Tsugikuma, 266,504, Cl. D14-28.000.

Baldwin Piano & Organ Company: *See*—
Kelly, Lawrence J., 266,525, Cl. D17-22.000.

Barr, Josef J. Diamond necklace. 266,493, 10-12-82, Cl. D11-6.000.

Bayless, Mark S. Aerial toy. 266,528, 10-12-82, Cl. D21-86.000.

Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corporation. Chair. 266,469, 10-12-82, Cl. D6-191.000.

Bladen, Roy V. Cutting tool. 266,478, 10-12-82, Cl. D8-5.000.

Bone, Arnold R., to Dennison Manufacturing Company. Bundling tie. 266,484, 10-12-82, Cl. D8-394.000.

Brody, Robert D.: *See*—
Toback, Harvard, 266,489, Cl. D9-455.000.

Canon Kabushiki Kaisha: *See*—
Matsushima, Hiroshi, 266,524, Cl. D16-134.000.

Cassett, Channing, to Valdor International Cosmetics Ltd. Toothbrush and toothpaste tube cap set. 266,459, 10-12-82, Cl. D4-18.000.

Cavanagh, Robert A. Rotatable telephone support. 266,507, 10-12-82, Cl. D14-60.000.

Conceptual Factors, Inc.: *See*—
Lutz, William R., 266,486, Cl. D9-352.000.

Cordony, Mark H.: *See*—
Cordony, Peter C.; and Cordony, Mark H., 266,465, Cl. D6-186.000.

Cordony, Peter C.; and Cordony, Mark H. Housing for hairdresser's mirror and storage shelves. 266,465, 10-12-82, Cl. D6-186.000.

Corning Glass Works: *See*—
Moskal, Loretta H., 266,473, Cl. D7-1.000.

Cridland, Michael: *See*—
Pulos, Arthur J.; and Cridland, Michael, 266,503, Cl. D14-6.000.

Davies, Evan E., to Talon, Inc. Slider holder. 266,481, 10-12-82, Cl. D8-73.000.

de Jesus Veliz Villalta, Manuel. Baby carriage. 266,497, 10-12-82, Cl. D12-128.000.

Dennison Manufacturing Company: *See*—
Bone, Arnold R., 266,484, Cl. D8-394.000.

Dictaphone Corporation: *See*—
Pulos, Arthur J.; and Cridland, Michael, 266,503, Cl. D14-6.000.

Edwards, Michael J. Combined advertising display stand and brochure holder. 266,462, 10-12-82, Cl. D6-146.000.

Edwards, Michael J. Combined advertising display stand and brochure holder. 266,464, 10-12-82, Cl. D6-184.000.

Electronic Industries, Inc.: *See*—
Saidel, Jack R., 266,505, Cl. D14-37.000.

Engel, Simon L., to HDE Systems, Inc. Material machining device enclosure. 266,520, 10-12-82, Cl. D15-122.000.

Everhan, Walter, to American Commercial Incorporated. Saucer. 266,472, 10-12-82, Cl. D7-1.000.

Everhan, Walter, to American Commercial Incorporated. Kettle. 266,474, 10-12-82, Cl. D7-59.000.

Everhan, Walter, to American Commercial Incorporated. Teapot. 266,475, 10-12-82, Cl. D7-59.000.
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Famolare, Inc.: *See*—
Famolare, Joseph P., Jr., 266,455, Cl. D2-326.000.
Famolare, Joseph P., Jr., to Famolare, Inc. Shoe upper. 266,455, 10-12-82, Cl. D2-326.000.
Felix, Cristian J.: *See*—
Genaro, Donald M.; and Felix, Cristian J., 266,519, Cl. D15-68.000.
Fernalld, Clifford S., Jr.; and Hill, Charlie H., Jr., to Mead Corporation, The. Memory cartridge for electronic printer control. 266,514, 10-12-82, Cl. D14-114.000.
Fiskladan Packing AB: *See*—
Larson, Goran S., 266,539, Cl. D34-40.000.
Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Vehicular telephone set of similar article. 266,506, 10-12-82, Cl. D14-53.000.
Furbershaw, Gerard A.; Albert, Stephen B.; and Gruye, Dale W., to Quadri Netics International Technology, Inc. Multiple mode communication terminal. 266,512, 10-12-82, Cl. D14-101.000.
Gammons, Clifford E.; Pagel, Kenneth L.; and Jackson, Barry N., to American Hospital Supply Corporation. Patient treatment mattress with inflatable channels. 266,470, 10-12-82, Cl. D6-204.000.
Garbe, D. Craig. Portable control system console or similar article. 266,500, 10-12-82, Cl. D13-12.000.
Genaro, Donald M.; and Felix, Cristian J., to Singer Company, The. Combined sewing machine and work support extension. 266,519, 10-12-82, Cl. D15-68.000.
Goldstein, Leonard. Combined shelf bracket and wall support. 266,482, 10-12-82, Cl. D8-381.000.
Gonsalves, Patricia. Scrubbing brush. 266,458, 10-12-82, Cl. D4-03.000.
Grube, Clifford E., to Associated Mills, Inc. Manually held body massager. 266,532, 10-12-82, Cl. D24-41.000.
Gruye, Dale W.: *See*—
Furbershaw, Gerard A.; Albert, Stephen B.; and Gruye, Dale W., 266,512, Cl. D14-101.000.
Guerette, Richard, to Arnoldware-Rogers (Canada) Ltee. Packaging container or similar article. 266,485, 10-12-82, Cl. D9-349.000.
Gustafsson, Gosta C., to Fagersta AB. Shank adapter for a rock drilling machine. 266,521, 10-12-82, Cl. D15-138.000.
Hara, Kunio: *See*—
Yasutani, Shigeki; and Hara, Kunio, 266,523, Cl. D16-32.000.
Harris, Warner O. Remote control oil sump drain valve. 266,518, 10-12-82, Cl. D15-5.000.
Harvey, Thomas D.: *See*—
Winter, Russell K.; Savas, Nedim; Snively, Joseph H.; and Harvey, Thomas D., 266,466, Cl. D6-186.000.
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HDE Systems, Inc.: *See*—
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Heijnen, Gerard J., to U.S. Philips Corporation. Combined television receiver, radio receiver, cassette recorder and clock. 266,502, 10-12-82, Cl. D14-5.000.
Helzer, James A., to Unicover Corporation. Adjustable plate holder. 266,461, 10-12-82, Cl. D6-142.000.
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Holloway, John O.: *See*—
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Hudson, Michael A.: *See*—
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Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Amplifier. 266,510, 10-12-82, Cl. D14-96.000.
International Business Machines Corporation: *See*—
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Jackson, Barry N.: *See*—
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Johanson, Walter A. Greenhouse. 266,534, 10-12-82, Cl. D25-15.000.
Johnson, Thomas K. Article carrier for truck cabs. 266,457, 10-12-82, Cl. D3-40.000.
Jones, John A.: *See*—
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Kahn, Evan R. Combined container and applicator for hair dye 266,537, 10-12-82, Cl. D28-7.000.
Kahn, Evan R. Combined container and applicator for hair dye 266,538, 10-12-82, Cl. D28-7.000.
Kanitz, Roy, to Kardex Systems, Inc. Combined shelf index and keyboard for a file retrieval system. 266,515, 10-12-82, Cl. D14-115.000
Kardex Systems, Inc.: *See*—
Kanitz, Roy, 266,515, Cl. D14-115.000.
Keitoku, Noboru: *See*—
Yamamoto, Jun-Ichi; Nomura, Toshihito; and Keitoku, Noboru. 266,508, Cl. D14-71.000.
Yamamoto, Jun-Ichi; and Keitoku, Noboru, 266,511, Cl. D14-96.000.
Kelly, Lawrence J., to Baldwin Piano & Organ Company. Bass drum. 266,525, 10-12-82, Cl. D17-22.000.
Kiekhaefer, Elmer C. Outboard unit of an inboard-outboard drive for watercraft. 266,516, 10-12-82, Cl. D15-4.000.
King, Lewis J., Jr., to United States of America, Army. Memorial plaque. 266,496, 10-12-82, Cl. D11-136.000.
Lafont, Jean-Pierre M. Physical exerciser. 266,530, 10-12-82, Cl. D21-198.000.
Larson, Goran S., to Fiskladan Packing AB. Box for transporting fish. 266,539, 10-12-82, Cl. D34-40.000.
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Lutz, William R., to Conceptual Factors, Inc. Fuel container. 266,486, 10-12-82, Cl. D9-352.000.
Mansau, Serge, to Lever Brothers Company. Packaging container for a bottle or the like. 266.487, 10-12-82, Cl. D9-430.000.
Marshall, Eric J. Housing for an intercom or similar business machine. 266,509, 10-12-82, Cl. D14-92.000.
Marshall, Willie J. Handle for shopping bag or similar article. 266,488, 10-12-82, Cl. D9-434.000.
Martin, Evelyn A. Jewelry pin. 266,494, 10-12-82, Cl. D11-41.000.
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Merry, Carl A., to Schaefer Marine, Inc. Marine slide. 266,483, 10-12-82, Cl. D8-382.000.
Minamizono, Tsugikuma, to Astatic Corporation, The. Phonograph stylus. 266,504, 10-12-82, Cl. D14-28.000.
Moskal, Loretta H., to Corning Glass Works. Platter or the like. 266,473, 10-12-82, Cl. D7-1.000.
Murphy, Roger J. Tent for use with trailer or the like. 266,531, 10-12-82, Cl. D21-253.000.
Nomura, Toshihito: *See*—
Yamamoto, Jun-Ichi; Nomura, Toshihito; and Keitoku, Noboru, 266,508, Cl. D14-71.000.
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Oppermann, Karl E., Jr.: *See*—
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Oppermann, Karl E., Sr.; and Oppermann, Karl E., Jr. Combined whistle and cricket noise maker for use as a divers signal above and below the water surface. 266,492, 10-12-82, Cl. D10-119.000.
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Raysik, Michael J. Wood tongs. 266,477, 10-12-82, Cl. D7-209.000.
Reel, Paul F. Pull tab remover. 266,480, 10-12-82, Cl. D8-40.000.
Rice, Francis J., to Appor Limited. Dispenser. 266,460, 10-12-82, Cl. D6-95.000.
Richelet, Daniel; and Pedinielli, Gilbert, to International Business Machines Corporation. Check processing terminal. 266,513, 10-12-82, Cl. D14-103.000.
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Scott, Russell M. Combined desk and lamp therefor. 266,463, 10-12-82, Cl. D6-156.000.
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Stefanik, Thomas, to Pascal, Michael. Electronic hand control unit for adjustable bed. 266,501, 10-12-82, Cl. D13-38.000.
Strickler, Harry. Inflatable umbrella. 266,456, 10-12-82, Cl. D3-5.000.
Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Foot cover for automobile auxiliary light. 266,536, 10-12-82, Cl. D26-113.000.
Sweet, Frank L.: *See*—
Norris, Daniel A.; and Sweet, Frank L., 266,522, Cl. D15-145.000.
Symington, Donald F. Picture frame. 266,471, 10-12-82, Cl. D6-235.000.
Takahashi, Koichi, to Kabushiki Kaisha Suwa Seikosha. Wrist watch. 266,490, 10-12-82, Cl. D10-39.000.
Talon, Inc.: *See*—
Davies, Evan E., 266,481, Cl. D8-73.000.
Thomasson, Harry W., to Osmos Plast AB. Dough-scraper. 266,476, 10-12-82, Cl. D7-102.000.
Toback, Harvard, to Brody, Robert D.; and Matalon, Norma. Modular packaging container for a bottle. 266,489, 10-12-82, Cl. D9-455.000.
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Ylanko, Jorma, 266,468, Cl. D6-188.000.
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Werst, Donald L.; Roberts, Richard L.; Hudson, Michael A.; Ray, Robert C.; and Holloway, John O. Fuel pump anti-tamper enclosure. 266,517, 10-12-82, Cl. D15-5.000.
Wilson, Thomas D.; and Scott, William G., to Abbott Laboratories. Collapsible solution container for medical liquids. 266,533, 10-12-82, Cl. D24-58.000.
Winter, Russell K.; Savas, Nedim; Snively, Joseph H.; and Harvey, Thomas D., to Russell William Ltd. Shelf display unit. 266,466, 10-12-82, Cl. D6-186.000.
Yamamoto, Jun-Ichi; Nomura, Toshihito; and Keitoku, Noboru, to Pioneer Kabushiki Kaisha. Tuner. 266,508, 10-12-82, Cl. D14-71.000.
Yamamoto, Jun-Ichi; and Keitoku, Noboru, to Pioneer Kabushiki Kaisha. Amplifier. 266,511, 10-12-82, Cl. D14-96.000.
Yasutani, Shigeki; and Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Sorter for use with a copying machine. 266,523, 10-12-82, Cl. D16-32.000.
Ylanko, Jorma, to Vaasanmylly Oy. Combined desk and auxiliary shelf for a data terminal. 266,467, 10-12-82, Cl. D6-188.000.
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Kirsch, Ted T., 4,895, Cl. 68.000.
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ISSUED OCTOBER 12, 1982

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187 4,353,707

CLASS 15

22 R 4,353,141
144 R 4,353,142
162 4,353,143
246 4,353,144
321 4,353,145

CLASS 16

387 4,353,146

CLASS 17

1 E 4,353,147

CLASS 19

105 4,353,148
107 4,353,149

CLASS 23

230 B 4,353,708
313 FB 4,353,709

CLASS 24

71.1 4,353,150
230 A 4,353,151

CLASS 29

25.42 4,353,153
27 A 4,353,154
149.5 DP 4,353,155
221.5 4,353,156
243.56 4,353,157
401.1 4,353,158
571 4,353,159
572 4,353,160
4,353,161
727 4,353,162

CLASS 30

123.4 4,353,163
360 4,353,164
376 4,353,165

CLASS 33

27 C 4,353,166
137 R 4,353,167
147 H 4,353,168
173 4,353,169
174 G 4,353,171
174 TA 4,353,170

CLASS 36

7.6 4,353,172
44 4,353,173
50 Re.31,052

CLASS 37

58 4,353,174
101 4,353,175
228 4,353,176
234 4,353,177

CLASS 40

107 4,353,178
479 4,353,179

CLASS 42

1 ST 4,353,180
78 4,353,181

CLASS 43

54.5 R 4,353,182

CLASS 44

56 4,353,710
63 4,353,711

CLASS 47

56 4,353,183
58 4,353,184

CLASS 48

197 R 4,353,712
202 4,353,713

CLASS 49

351 4,353,185
420 4,353,186
501 4,353,187

CLASS 51

295 4,353,714

CLASS 52

93 4,353,188
167 4,353,189
226 4,353,190
233 4,353,191
281 4,353,192
311 4,353,193
742 4,353,194

CLASS 53

54 4,353,195
451 4,353,196
492 4,353,197
570 4,353,198

CLASS 55

22 4,353,715
59 4,353,716
68 4,353,717
112 4,353,718
170 4,353,719
262 4,353,720
283 4,353,721
294 4,353,722
521 4,353,723

CLASS 56

10.2 4,353,199
27.5 4,353,200
364 4,353,201

CLASS 57

279 4,353,202

CLASS 59

85 4,353,203

CLASS 60

39.02 4,353,204
39.12 4,353,205
39.18 B 4,353,206
4,353,207
299 4,353,208
547 B 4,353,209
602 4,353,210
605 4,353,211
622 4,353,212
646 4,353,213
652 4,353,214
660 4,353,215
662 4,353,216
693 4,353,217

CLASS 62

6 4,353,218
183 4,353,219
228 4,353,220
239 4,353,221
268 4,353,222
442 4,353,223
515 4,353,224

CLASS 63

13 4,353,225

CLASS 65

8 4,353,724
27 4,353,725
4,353,726
36 4,353,727
273 4,353,728

CLASS 66

146 4,353,227
157 4,353,228
197 4,353,229

CLASS 70

275 4,353,230
316 4,353,231

CLASS 71

11 4,353,729
29 4,353,730
88 4,353,731
91 4,353,732
93 4,353,733
95 4,353,734
105 4,353,735
4,353,736

CLASS 72

50 4,353,232
88 4,353,233
98 4,353,234
130 4,353,235
193 4,353,236
205 4,353,237
209 4,353,238
391 4,353,239
410 4,353,240
457 4,353,241

CLASS 73

23.1 4,353,242
4,353,243
37 4,353,244
49.2 4,353,245
61.4 4,353,246
84 4,353,247
152 4,353,248
155 4,353,249
161 4,353,250
215 4,353,251
293 4,353,252
454 4,353,253
517 B 4,353,254
587 4,353,255
597 4,353,256
623 4,353,257
644 4,353,258
653 4,353,259
863.41 4,353,260

CLASS 74

87 4,353,261
108 4,353,262
337 4,353,263
441 4,353,264
501 R 4,353,265
552 4,353,266
579 R 4,353,267
587 4,353,268
682 4,353,269
689 4,353,270
826 4,353,271
859 4,353,272

CLASS 75

0.5 R 4,353,737
10 R 4,353,738
58 4,353,739
83 4,353,740
109 4,353,741
122 4,353,742
124 4,353,743
134 V 4,353,744

CLASS 81

425 R 4,353,273

CLASS 83

156 4,353,274
488 4,353,275
708 4,353,276
833 4,353,277

CLASS 84

1.01 4,353,278
1.24 4,353,279
306 4,353,280
384 4,353,281

CLASS 86

19 4,353,282

CLASS 89

37 G 4,353,283
40 B 4,353,284
42 B 4,353,285

CLASS 91

5 4,353,286
369 A 4,353,287
375 A 4,353,288
420 4,353,289
461 4,353,290

CLASS 92

99 4,353,291

CLASS 98

50 4,353,292

CLASS 99

283 4,353,293
575 4,353,294

CLASS 100

8 4,353,295
121 4,353,296

CLASS 101

77 4,353,297
93.05 4,353,298
144 4,353,299
365 4,353,300

CLASS 102

334 4,353,301
364 4,353,302
367 4,353,303
470 4,353,304
519 4,353,305

CLASS 104

166 4,353,306
183 4,353,307

CLASS 105

29 R 4,353,308
136 4,353,309
199 C 4,353,310
4,353,311
241.2 4,353,312
397 4,353,313
410 4,353,314

CLASS 106

2 4,353,745
89 4,353,746
4,353,747
4,353,748
97 4,353,749
100 4,353,750
306 4,353,751
309 4,353,752

CLASS 110

281 4,353,315

CLASS 112

262.3 4,353,316
266.2 4,353,317

CLASS 114

211 4,353,318
218 4,353,319
267 4,353,320
283 4,353,321

CLASS 116

34 B 4,353,322

CLASS 118

61 4,353,323
207 4,353,324
683 4,353,325
696 4,353,326

CLASS 119

5 4,353,327
20 4,353,328
52 A 4,353,329
95 4,353,330

CLASS 123

18 R 4,353,331
41.86 4,353,332
73 R 4,353,333
179 H 4,353,334
185 P 4,353,335
198 B 4,353,336
243 4,353,337
339 4,353,338
350 4,353,339
365 4,353,340
414 4,353,341
493 4,353,342
502 4,353,343
569 4,353,344
575 4,353,345

CLASS 124

24 R 4,353,346

CLASS 126

41 R 4,353,347
91 R 4,353,348
112 4,353,349
121 4,353,350
193 4,353,351
426 4,353,352
429 4,353,353
443 4,353,354
445 4,353,355
450 4,353,356
4,353,357

CLASS 128

4 4,353,358
66 4,353,359
79 4,353,360
80 C 4,353,361
4,353,362
130 4,353,363
152 4,353,364
203.15 4,353,365
205.12 4,353,366
213 A 4,353,367
214 R 4,353,368
214.4 4,353,369
269 4,353,370
303.17 4,353,371
640 4,353,372
641 4,353,373
686 4,353,374
689 4,353,152
782 4,353,375

CLASS 130

27 T 4,353,376
30 R 4,353,377
31 R 4,353,378

CLASS 131

231 4,353,379

CLASS 132

40 4,353,380

CLASS 134

22.13 4,353,753
111 4,353,381
113 4,353,382

CLASS 137

45 4,353,383
68 R 4,353,384
115 4,353,385
119 4,353,386
203 4,353,387
240 4,353,388
375 4,353,389
527.8 4,353,390
565 4,353,391
596.16 4,353,392
624.2 4,353,393
625.65 4,353,394
861 4,353,395

CLASS 139

54 4,353,396
435 4,353,397

CLASS 141

91 4,353,398

CLASS 144

2 R 4,353,399
117 R 4,353,400
193 A 4,353,401

CLASS 148

1.5 4,353,754
136 4,353,755
143 4,353,756
172 4,353,757

CLASS 149

109.6 4,353,758

CLASS 152

209 R 4,353,402
353 R 4,353,403

CLASS 156

64 4,353,759
66 4,353,760
69 4,353,761
164 4,353,762
184 4,353,763
203 4,353,764
212 4,353,765
233 4,353,766
245 4,353,767
253 4,353,768
299 4,353,769
308.4 4,353,770
403 4,353,771
433 4,353,772
442.1 4,353,773
443 4,353,774
540 4,353,775
555 4,353,776
643 4,353,777
644 4,353,778
659.1 4,353,779
664 4,353,780

CLASS 159

2 R 4,353,781

CLASS 160

236 4,353,404

CLASS 164

122.2 4,353,405
336 4,353,406
468 4,353,407
503 4,353,408

CLASS 165

2 4,353,409
18 4,353,410
48 R 4,353,411
59 4,353,412
92 4,353,413
95 4,353,414
104.21 4,353,415
168 4,353,416

CLASS 166

250 4,353,417
259 4,353,418
379 4,353,419
382 4,353,420

CLASS 172

5 4,353,421
41 4,353,422
260.5 4,353,423
438 4,353,424

CLASS 173

109 4,353,425
119 4,353,426

CLASS 174

22 R 4,354,050
47 4,354,051
48 4,354,052
84 R 4,354,053

CLASS 177

50 4,353,427

CLASS 178

3 4,354,054
42 4,354,055

CLASS 179

1 DM 4,354,059
1 MN 4,354,058
1 SA 4,354,057
1 SM 4,354,056
81 R 4,354,060
82 4,354,061
84 A 4,354,062
103 4,354,063
107 BC 4,354,064
107 H 4,354,065
115.5 DV 4,354,066
146 H 4,354,067

CLASS 180

7 R 4,353,428
70 MS 4,353,429

90 4,353,430

CLASS 181

118 4,353,431
166 4,353,432
207 4,353,433
258 4,353,434

CLASS 184

6.26 4,353,435

CLASS 187

9 R 4,353,436

CLASS 188

79.5 GC 4,353,438
79.5 GE 4,353,437
4,353,439
181 A 4,353,440
328 4,353,441
330 4,353,442

CLASS 192

3 T 4,353,443
3.29 4,353,444
4 R 4,353,445
21 4,353,446
64 4,353,447
70.13 4,353,448
82 R 4,353,449
84 C 4,353,450
89 B 4,353,451

CLASS 194

100 A 4,353,452
4,353,453

CLASS 198

347 4,353,454
384 4,353,455
397 4,353,456
774 4,353,457
781 4,353,458
852 4,353,459

CLASS 200

5 A 4,354,068
16 R 4,354,069
19 R 4,354,070
86.5 4,354,071
148 A 4,354,072
4,354,073
153 J 4,354,074
262 4,354,075
308 4,354,076
314 4,354,077
4,354,078
4,354,079
316 4,354,080
340 4,354,081

CLASS 201

25 4,353,782

CLASS 203

14 4,353,783
16 4,353,784

CLASS 204

129.2 4,353,785
144 4,353,786
159.15 4,353,787
192 S 4,353,788
195 R 4,353,789
290 F 4,353,790

CLASS 206

3 4,353,460
45.34 4,353,461
53 4,353,462
220 4,353,463
335 4,353,464
378 4,353,465
453 4,353,466

CLASS 208

10 4,353,791
254 H 4,353,792
262 4,353,793
321 4,353,794

CLASS 209

155 4,353,795
240 4,353,796
559 4,353,467

CLASS 210

159 4,353,797
181 4,353,798
321.3 4,353,799
605 4,353,800
635 4,353,801
654 4,353,802
728 4,353,803

CLASS 211

39 4,353,468
41 4,353,469
126 4,353,470

CLASS 212

259 4,353,471

CLASS 215

211 4,353,472
220 4,353,473
4,353,474
223 4,353,475

CLASS 219

10.49 R 4,354,082
10.55 F 4,354,083
10.55 R 4,354,084
59.1 4,354,085
64 4,354,086
73.2 4,354,087
75 4,354,088
97 4,354,089
121 LC 4,354,090
213 4,354,091
225 4,354,092
4,354,093
306 4,354,094
388 4,354,095
523 4,354,096

CLASS 220

85 D 4,353,476
224 4,353,477
4,353,478
301 4,353,479

CLASS 221

63 4,353,480
251 4,353,481

CLASS 222

1 4,353,482
153 4,353,483
189 4,353,484
243 4,353,485
500 4,353,487
501 4,353,488
570 4,353,489

CLASS 224

32 A 4,353,490

CLASS 225

3 4,353,491

CLASS 226

11 4,353,492
158 4,353,493

CLASS 228

143 4,353,494

CLASS 229

16 R 4,353,495
34 R 4,353,496
55 4,353,497
69 4,353,498

CLASS 233

27 4,353,499

CLASS 235

96 4,354,097
98 B 4,354,098
449 4,354,099
4,354,100
463 4,354,101

CLASS 236

34.5 4,353,500
4,353,501
47 4,353,502

CLASS 238

349 4,353,503

CLASS 239

14 4,353,504
167 4,353,505
206 4,353,506
240 4,353,507
590.3 4,353,508

CLASS 241

24 4,353,509

CLASS 242

54 R 4,353,512
55.53 4,353,511
82 4,353,513
84.2 A 4,353,514
86.7 4,353,515
118.32 4,353,510

CLASS 244

110 B 4,353,516
216 4,353,517

CLASS 248

60 4,353,518
72 4,353,519
346 4,353,520
552 4,353,521

CLASS 249

144 4,353,522

CLASS 250

201 4,354,102
4,354,103
211 J 4,354,104
231 R 4,354,105
239 4,354,106
4,354,107
251 4,354,108
349 4,354,109
358.1 4,354,110
396 R 4,354,111
423 R 4,354,113
458.1 4,354,114
551 4,354,115
576 4,354,116

CLASS 251

65 4,353,523
145 4,353,524
174 4,353,525

CLASS 252

8.5 A 4,353,804
8.55 D 4,353,805
4,353,806
49.6 4,353,807
301.4 P 4,353,808
316 4,353,809
412 4,353,810
417 4,353,811
4,353,812
429 B 4,353,813
441 4,353,814
466 PT 4,353,815
512 4,353,816

CLASS 254

292 4,353,526
304 4,353,527
360 4,353,528

CLASS 256

59 4,353,529

CLASS 260

112.5 R 4,353,821
4,353,822
4,353,823
156 4,353,824
239.1 4,353,825
239.3 P 4,353,826
4,353,827
326 NS 4,353,828
326.25 4,353,829
326.86 4,353,830
386 4,353,833
404.5 4,353,834
409 4,353,835
410.5 4,353,836
412.4 4,353,837
419 4,353,838
4,353,839
448 R 4,353,840
453 P 4,353,841
465 D 4,353,842
466 4,353,843
549 4,353,844

CLASS 261

3 4,353,845
4 4,353,846
36 A 4,353,847
69 R 4,353,848

CLASS 264

2.7 4,353,849
25 4,353,850
37 4,353,851
4,353,852
41 4,353,853
63 4,353,854
126 4,353,855
240 4,353,856
258 4,353,857
268 4,353,858
506 4,353,859
519 4,353,860
561 4,353,861
571 4,353,862

CLASS 266

45 4,353,530
120 4,353,531
242 4,353,532
265 4,353,533
270 4,353,534
275 4,353,535

CLASS 269

94 4,353,536
266 4,353,537

CLASS 271

3 4,353,538
10 4,353,539
4,353,540
275 4,353,541
294 4,353,542
306 4,353,543

CLASS 272

73 4,353,544
76 4,353,545
117 4,353,546
130 4,353,547

CLASS 273

1.5 R 4,353,548
67 A 4,353,549
67 R 4,353,550
73 R 4,353,551
85 G 4,353,552
121 R 4,353,553
143 R 4,353,554
148 R 4,353,555
186 A 4,353,556
227 4,353,557

CLASS 277

30 4,353,558
53 4,353,559
236 4,353,560

CLASS 279

123 4,353,561

CLASS 280

7.13 4,353,562
24 4,353,563
79.3 4,353,564
80 B 4,353,565
87.04 A 4,353,566
92 4,353,567
94 4,353,568
217 4,353,569
283 4,353,570
295 4,353,571
492 4,353,572
606 4,353,573
613 4,353,574
614 4,353,575
615 4,353,576
642 4,353,577
781 4,353,578
804 4,353,579

CLASS 285

39 4,353,580
149 4,353,581

CLASS 290

1 R 4,354,117

CLASS 292

169.15 4,353,582
320 4,353,583

CLASS 293

1 4,353,584

CLASS 294

86.1 4,353,585

CLASS 295

7 4,353,586

CLASS 296

15 4,353,587
37.1 4,353,588
50 4,353,589
78.1 4,353,590
97 B 4,353,592
97 D 4,353,593
97 H 4,353,591

CLASS 297

307 4,353,594
408 4,353,595

CLASS 298

2 4,353,596
12 4,353,597

CLASS 299

2 4,353,598

CLASS 303

22 R 4,353,599
24 F 4,353,600
106 4,353,601

CLASS 307

66 4,354,118
115 4,354,119
132 E 4,354,120
252 C 4,354,121
261 4,354,122
475 4,354,123
522 4,354,124

CLASS 308

10 4,353,602
26 4,353,603
184 A 4,353,604
187.2 4,353,605
189 R 4,353,606
214 4,353,607

CLASS 310

103 4,354,125
156 4,354,126
198 4,354,127
242 4,354,128
313 A 4,354,130
313 C 4,354,129
328 4,354,131
334 4,354,132
344 4,354,133
800 4,354,134

CLASS 313

93 4,354,135
139 4,354,136
188 Re.31,054
222 4,354,137
404 Re.31,055
440 4,354,138
486 4,354,139
499 4,354,140

CLASS 315

241 P 4,354,141
241 S 4,354,142
368 4,354,143

CLASS 318

13 4,354,144
254 4,354,145
341 4,354,146
363 4,354,147

CLASS 320

20 4,354,148
40 4,354,149

CLASS 322

63 4,354,150

CLASS 323

225 4,354,151
241 4,354,152

CLASS 324

73 R Re.31,056
95 4,354,153
126 4,354,154
133 4,354,155
228 4,354,156
312 4,354,157

CLASS 328

75 4,354,158

CLASS 330

86 4,354,159
107 4,354,160
254 4,354,161
260 4,354,162
293 4,354,163

CLASS 331

1 A 4,354,164
96 4,354,165
107 A 4,354,166

CLASS 333

103 4,354,167
156 4,354,168
173 4,354,169

CLASS 337

334 4,354,170

CLASS 339

2 R 4,353,608
17 C 4,353,609
19 4,353,610
92 R 4,353,611
95 R 4,353,612
119 C 4,353,613
125 R 4,353,614

CLASS 340

21 4,354,171
29 4,354,172
52 F 4,354,173
63 4,354,174
347 AD 4,354,175
347 CC 4,354,177
347 NT 4,354,176
572 4,354,178
575 4,354,179
619 4,354,180
642 4,354,181
650 4,354,182
682 4,354,183
709 4,354,184
4,354,185
728 4,354,186
763 4,354,187
814 4,354,188
825.31 4,354,189
870.18 4,354,190

CLASS 343

7.5 4,354,191
14 4,354,192
882 4,354,193

CLASS 346

75 4,354,194
4,354,195
108 4,354,196
140 R 4,354,197

CLASS 350

3.71 4,353,615
3.75 4,353,616
6.8 4,353,617
91 4,353,618
96.21 4,353,619
4,353,620
145 4,353,621
162 SF 4,353,622
391 4,353,623
453 4,353,624

CLASS 351

13 4,353,625
36 4,353,626

CLASS 353

24 4,353,627

CLASS 354

5 4,353,628
23 D 4,353,629
29 4,353,630
51 4,353,631
133 4,353,632
173 4,353,633
195 4,353,634
320 4,353,635

CLASS 355

1 4,353,636
3 DD 4,353,637
8 4,353,638
10 4,353,639
21 4,353,640
38 4,353,641
45 4,353,642
57 4,353,643
72 4,353,644
75 4,353,645
76 4,353,646
77 Re.31,053
85 4,353,647
133 4,353,648

CLASS 356

33 4,353,649
371 4,353,650

CLASS 357

16 4,354,198
19 4,354,199

CLASS 358

23 4,354,200
122 4,354,201
183 4,354,202
227 4,354,203
4,354,204
250 4,354,205
254 4,354 206

CLASS 360

9.1 4,354,207
40 4,354,208
61 4,354,209
77 4,354,210
84 4,354,211
113 4,354,212
133 4,354,213

CLASS 361

23 4,354,214
63 4,354,215
92 4,354,216
104 4,354,217
147 4,354,218
284 4,354,219
341 4,354,220

CLASS 362

300 4,354,221
352 4,354,222

CLASS 363

124 4,354,223

CLASS 364

183 4,354,224
200 4,354,225
4,354,226

	4,354,227
	4,354,228
	4,354,229
	4,354,230
	4,354,231
	4,354,232
420	4,354,233
424	4,354,234
	4,354,235
424.1	4,354,236
428	4,354,237
431.05	4,354,238
	4,354,239
434	4,354,240
492	4,354,241
501	4,354,242
515	4,354,243
556	4,354,244
606	4,354,245
709	4,354,246
713	4,354,247
724	4,354,248
754	4,354,249
802	4,354,250
900	4,354,251
	4,354,252
CLASS 365	
15	4,354,253
33	4,354,254
154	4,354,255
189	4,354,256
219	4,354,257
230	4,354,258
	4,354,259
CLASS 366	
2	4,353,651
193	4,353,652
CLASS 368	
10	4,354,260
CLASS 370	
42	4,354,261
58	4,354,262
94	4,354,263
110	4,354,264
111	4,354,265
112	4,354,266
CLASS 371	
11	4,354,267
20	4,354,268
43	4,354,269
68	4,354,270
CLASS 372	
19	4,354,271
36	4,354,272
41	Re.31,057
CLASS 375	
27	4,354,273
120	4,354,274
CLASS 376	
251	4,353,863
402	4,353,864
CLASS 378	
99	4,354,112
CLASS 400	
70	4,353,653
124	4,353,654
144.2	4,353,655
157.3	4,353,656
208	4,353,657
232	4,353,658
CLASS 403	
24	4,353,659
132	4,353,660
171	4,353,661
	4,353,662
230	4,353,663
232.1	4,353,664
CLASS 404	
10	4,353,665
60	4,353,666
CLASS 406	
29	4,353,667
90	4,353,668
CLASS 408	
185	4,353,669
193	4,353,670
CLASS 409	
26	4,353,671
97	4,353,672
CLASS 411	
38	4,353,673
CLASS 414	
323	4,353,674
403	4,353,675
512	4,353,676
735	4,353,677
748	4,353,678
CLASS 415	
115	4,353,679
219 R	4,353,680
CLASS 416	
11	4,353,681
CLASS 417	
295	4,353,682
379	4,353,683
388	4,353,684
406	4,353,685
CLASS 420	
422	4,353,865
CLASS 422	
37	4,353,866
68	4,353,867
101	4,353,868
102	4,353,869
129	4,353,870
159	4,353,871
179	4,353,872
	4,353,873
193	4,353,874
249	4,353,875
263	4,353,876
CLASS 423	
6	4,353,877
53	4,353,878
	4,353,879
	4,353,880
58	4,353,881
111	4,353,882
139	4,353,883
277	4,353,884
289	4,353,885
CLASS 424	
1	4,353,886
15	4,353,887
25	4,353,888
48	4,353,889
49	4,353,890
50	4,353,891
52	4,353,892
180	4,353,893
	4,353,894
182	4,353,895
195	4,353,896
200	4,353,897
238	4,353,898
243	4,353,899
248.54	4,353,900
248.57	4,353,901
250	4,353,902
	4,353,903
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	4,353,905
251	4,353,906
	4,353,907
	4,353,908
256	4,353,909
	4,353,910
258	4,353,911
	4,353,912
263	4,353,913
267	4,353,914
269	4,353,915
270	4,353,916
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	4,353,919
	4,353,920
273 R	4,353,921
274	4,353,922
285	4,353,923
317	4,353,924
322	4,353,925
CLASS 425	
83.1	4,353,686
CLASS 426	
20	4,353,926
101	4,353,927
238	4,353,928
243	4,353,929
281	4,353,930
483	4,353,931
532	4,353,932
CLASS 427	
8	4,353,933
57	4,353,934
89	4,353,935
94	4,353,936
130	4,353,937
214	4,353,938
238	4,353,939
	4,353,940
287	4,353,941
434.3	4,353,942
CLASS 428	
1	4,353,943
74	4,353,944
90	4,353,945
109	4,353,946
116	4,353,947
131	4,353,948
195	4,353,949
	4,353,950
198	4,353,951
201	4,353,952
213	4,353,953
216	4,353,954
246	4,353,955
255	4,353,956
292	4,353,957
329	4,353,958
331	4,353,959
373	4,353,960
380	4,353,961
407	4,353,962
408	4,353,963
	4,353,964
412	4,353,965
428	4,353,966
520	4,353,967
CLASS 429	
64	4,353,968
144	4,353,969
CLASS 430	
31	4,353,970
58	4,353,971
213	4,353,972
216	4,353,973
218	4,353,974
239	4,353,975
251	4,353,976
256	4,353,977
302	4,353,978
372	4,353,979
532	4,353,980
536	4,353,981
CLASS 432	
80	4,353,687
217	4,353,688
225	4,353,689
234	4,353,690
CLASS 433	
5	4,353,691
16	4,353,692
27	4,353,693
77	4,353,694
78	4,353,695
125	4,353,696
126	4,353,697
164	4,353,698
CLASS 434	
72	4,353,699
168	4,353,700
259	4,353,701
CLASS 435	
7	4,353,982
11	4,353,983
14	4,353,984
59	4,353,985
119	4,353,986
147	4,353,987
287	4,353,988
	4,353,989
	4,353,990
CLASS 440	
8	4,353,702
21	4,353,703
CLASS 455	
54	4,354,275
139	4,354,276
259	4,354,277
617	4,354,278
CLASS 464	
40	4,353,226
72	4,353,704
CLASS 474	
158	4,353,705
CLASS 501	
20	4,353,991
CLASS 521	
26	4,353,992
65	4,353,993
110	4,353,994
125	4,353,995
CLASS 523	
105	4,353,996
210	4,353,997
219	4,353,998
454	4,353,819
CLASS 524	
3	4,353,999
232	4,353,817
388	4,354,000
409	4,353,820
458	4,353,818
501	4,354,001
588	4,354,002
CLASS 525	
222	4,354,003
240	4,354,004
257	4,354,005
359.5	4,354,006
370	4,354,007
	4,354,008
CLASS 526	
125	4,354,009
140	4,354,010
227	4,354,011
259	4,354,012
CLASS 528	
16	4,354,013
45	4,354,014
89	4,354,015
128	4,354,016
172	4,354,017
206	4,354,018
272	4,354,019
323	4,354,020
CLASS 542	
431	4,354,021
CLASS 544	
28	4,354,022
030	4,354,023
181	4,354,024
231	4,354,025
238	4,354,026
346	4,354,027
374	4,354,028
CLASS 548	
239	4,354,029
247	4,354,030
362	4,354,031
CLASS 549	
229	4,353,831
272	4,353,832
CLASS 560	
41	4,354,032
48	4,354,033
62	4,354,034
75	4,354,035
233	4,354,036
CLASS 562	
416	4,354,037
475	4,354,038
582	4,354,039
CLASS 564	
67	4,354,040
123	4,354,041
144	4,354,042
CLASS 568	
445	4,354,043
479	4,354,044
487	4,354,045
724	4,354,046
730	4,354,047
	4,354,048
CLASS 585	
415	4,354,049

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D2—	326	266,455
D3—	5	266,456
	40	266,457
D4—	03	266,458
	18	266,459
D6—	95	266,460
	142	266,461
	146	266,462
	156	266,463
	184	266,464
	186	266,465
		266,466
	188	266,467
		266,468
	191	266,469
	204	266,470
	235	266,471
D7—	1	266,472
		266,473
	59	266,474
		266,475
	102	266,476
	209	266,477
D8—	5	266,478
	17	266,479
	40	266,480
	73	266,481
	381	266,482
	382	266,483
	394	266,484
D9—	349	266,485
	352	266,486
	430	266,487
	434	266,488
	455	266,489
D10—	39	266,490
		266,491
	119	266,492
D11—	6	266,493
	41	266,494
	58	266,495
	136	266,496
D12—	128	266,497
		266,498
	131	266,499
D13—	12	266,500
	38	266,501
D14—	5	266,502
	6	266,503
	28	266,504
	37	266,505
	53	266,506
	60	266,507
	71	266,508
	92	266,509
	96	266,510
		266,511
	101	266,512
	103	266,513
	114	266,514
	115	266,515
D15—	4	266,516
	5	266,517
		266,518
	68	266,519
	122	266,520
	138	266,521
	145	266,522
D16—	32	266,523
	134	266,524
D17—	22	266,525
D19—	76	266,526
D21—	30	266,527
	86	266,528
	143	266,529
	198	266,530
	253	266,531
D24—	41	266,532
	58	266,533
D25—	15	266,534
D26—	10	266,535
	113	266,536
D28—	7	266,537
		266,538
D34—	40	266,539

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01 : 4,353,572	4,353,900	4,353,408	4,353,324	4,353,437	4,353,715
04 : 4,353,471	4,353,901	4,353,604	4,353,328	4,353,438	4,353,757
4,353,546	4,353,922	4,353,681	4,353,369	4,353,439	4,353,777
4,353,593	4,353,926	4,353,741	4,353,372	4,353,441	4,353,798
4,353,609	4,353,930	4,353,795	4,353,373	4,353,474	4,353,892
4,353,846	4,353,931	4,353,862	4,353,393	4,353,567	4,353,912
4,353,848	4,353,961	4,353,908	4,353,398	4,353,660	4,353,976
4,354,232	4,353,969	4,353,920	4,353,418	4,353,677	4,353,977
4,354,240	4,353,998	4,353,966	4,353,465	4,353,820	4,354,015
4,354,249	4,353,999	4,353,971	4,353,470	4,353,830	4,354,109
05 : 4,353,351	4,354,019	4,354,012	4,353,477	4,354,028	4,354,266
4,353,452	4,354,052	4,354,123	4,353,488	4,354,030	26 : 4,353,133
06 : Re.31,056	4,354,053	4,354,166	4,353,491	4,354,202	4,353,183
4,353,161	4,354,066	4,354,230	4,353,496	19 : 4,353,241	4,353,198
4,353,205	4,354,077	4,354,234	4,353,498	4,353,376	4,353,271
4,353,212	4,354,088	10 : 4,353,950	4,353,506	4,353,402	4,353,289
4,353,218	4,354,101	4,354,006	4,353,508	4,353,788	4,353,290
4,353,231	4,354,102	4,354,041	4,353,553	20 : 4,353,329	4,353,337
4,353,235	4,354,107	4,354,156	4,353,554	4,353,381	4,353,338
4,353,244	4,354,118	11 : 4,354,192	4,353,563	4,353,483	4,353,394
4,353,249	4,354,162	12 : 4,353,138	4,353,565	4,353,548	4,353,429
4,353,279	4,354,163	4,353,140	4,353,620	21 : 4,353,200	4,353,448
4,353,294	4,354,168	4,353,180	4,353,670	4,353,413	4,353,458
4,353,295	4,354,174	4,353,298	4,353,674	4,353,457	4,353,490
4,353,356	4,354,177	4,353,360	4,353,692	4,353,657	4,353,573
4,353,364	4,354,193	4,353,379	4,353,700	4,353,658	4,353,676
4,353,383	4,354,196	4,353,386	4,353,711	4,354,083	4,353,694
4,353,390	4,354,205	4,353,443	4,353,771	22 : 4,353,144	4,353,739
4,353,412	4,354,207	4,353,500	4,353,794	4,353,321	4,353,831
4,353,434	4,354,211	4,353,501	4,353,799	4,353,445	4,353,834
4,353,436	4,354,213	4,353,507	4,353,811	4,353,556	4,353,857
4,353,455	4,354,235	4,353,564	4,353,812	4,353,560	4,353,859
4,353,468	4,354,243	4,353,653	4,353,813	4,353,691	4,353,905
4,353,495	4,354,247	4,353,675	4,353,814	4,353,707	4,353,955
4,353,512	4,354,248	4,353,780	4,353,815	4,353,749	4,353,987
4,353,532	4,354,250	4,353,949	4,353,822	4,353,803	4,353,993
4,353,555	4,354,257	4,354,060	4,353,838	24 : 4,353,181	4,354,002
4,353,558	4,354,271	4,354,144	4,353,839	4,353,310	4,354,018
4,353,566	4,354,274	4,354,228	4,353,932	4,353,375	4,354,021
4,353,568	4,354,275	4,354,229	4,353,968	4,353,422	4,354,029
4,353,585	4,354,277	4,354,268	4,354,062	4,353,545	4,354,047
4,353,596	4,354,278	13 : 4,353,851	4,354,074	4,353,552	4,354,048
4,353,610	08 : 4,353,193	4,353,962	4,354,076	4,353,684	4,354,181
4,353,650	4,353,263	4,353,994	4,354,120	4,353,768	27 : 4,353,221
4,353,664	4,353,521	4,354,098	4,354,149	4,353,804	4,353,395
4,353,666	4,353,524	17 : 4,353,164	4,354,159	4,354,164	4,353,399
4,353,673	4,353,598	4,353,166	4,354,222	25 : 4,353,139	4,353,463
4,353,767	4,353,952	4,353,174	4,354,252	4,353,160	4,353,464
4,353,776	4,353,988	4,353,176	18 : 4,353,209	4,353,233	4,353,578
4,353,829	4,354,194	4,353,177	4,353,281	4,353,371	4,353,587
4,353,886	09 : 4,353,325	4,353,182	4,353,314	4,353,502	4,353,589
4,353,889	4,353,361	4,353,232	4,353,331	4,353,527	4,353,668
4,353,894	4,353,362	4,353,250	4,353,332	4,353,613	4,353,990

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29 : 4,354,194
4,353,219
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